DECEMBER, 1944

BUY WAR SAVINGS BONDS AND STAMPS

Industrial FINISHING

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Published Monthly in the Interest of Modern Production Finishing

PLASTIC-BASE *Paladin* TAMES UNRULY ZINC

UNIQUE ADHESION UNAFFECTED BY 5 YEARS AGING

ZINC, plated or die cast, defies conventional finishes. Roxalin's Paladin is helping overcome this difficulty.

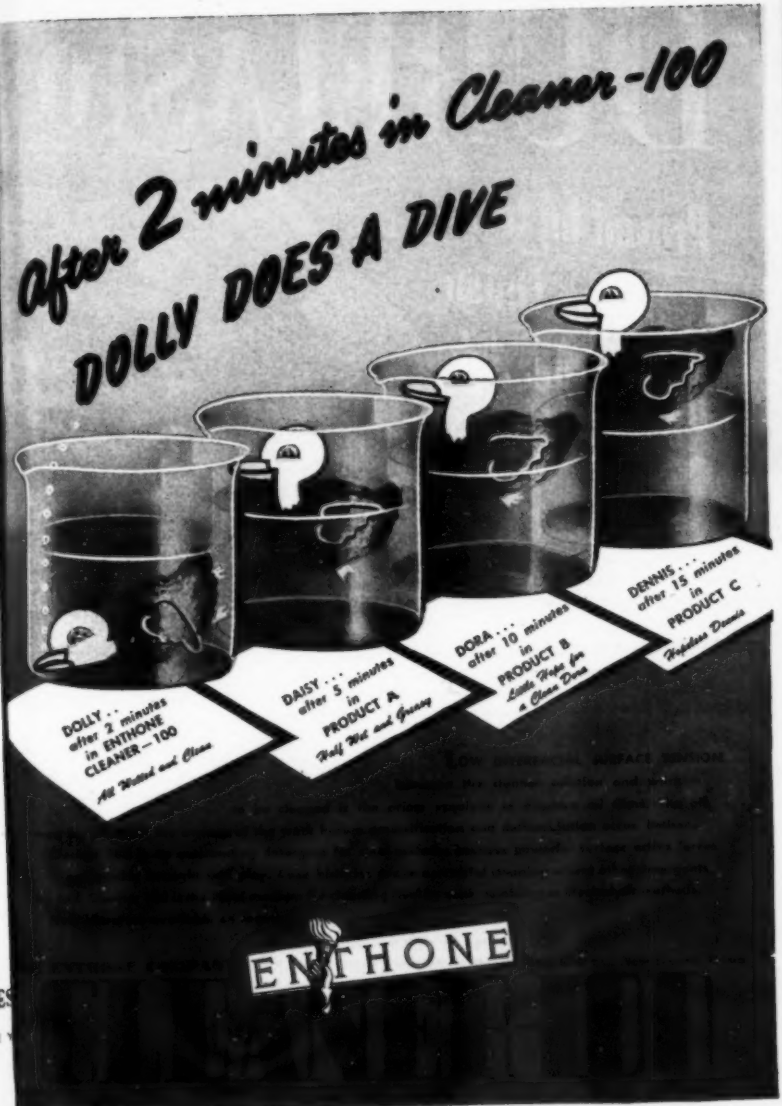
For example, back in 1939, a producer of auto radio grilles made of die cast zinc had a 4-way finishing problem. He needed a coating that: **1. would cling to untreated zinc without chipping or peeling; 2. would bond or anchor a decorative top coat in certain areas; 3. would provide a colorless film of protection for the polished highlights of the grille; 4. and would not require baking at temperatures that would distort the die castings.**

The splendid adhesion of clear Paladin led to its use for this job. After 5 years this plastic-base finish is as tough, adherent and as brightly polished as the day it was applied.

Working with hard-to-finish metals? Paladin can help you. Write Dept. 801 for technical data.

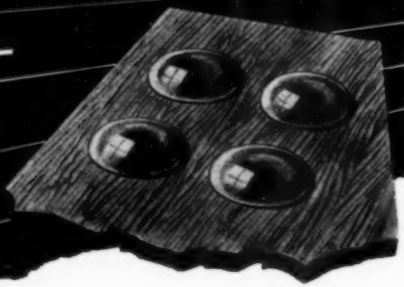
ROXALIN *flexible* FINISHES
INCORPORATED
ELIZABETH • NEW JERSEY

ONLY ROXALIN MAKES PALADIN


After 2 minutes in Cleaner-100
DOLLY DOES A DIVE
DOLLY . . . after 2 minutes in ENTHONE CLEANER—100
All Wetted and Clean
DAISY . . . after 5 minutes in PRODUCT A
Half Wet and Greasy
DORA . . . after 10 minutes in PRODUCT B
Little Water for a Clean Dress
DENNIS . . . after 15 minutes in PRODUCT C
Hopeless Dennis
ENTHONE

DURELASTO

Proved by tests – A Better Finish for a Better Job



*DURELASTO-finished panel under laboratory test for resistance to reagents placed on surface under inverted glass cups: acetic acid; citric acid; 5% caustic soda solution; and 100 proof alcohol. After 24 hours liquids were wiped off and no discoloration or breakdown of the DURELASTO finish was observed.

No finish is better than the name behind it. That's why we're proud of DURELASTO—the new wood finish backed by Zapon's years of "know how" in the field of industrial product finishes.

PRE-TESTED THE ZAPON WAY DURELASTO—as with all Zapon finishes—has been subjected to the most rigid tests in Zapon's laboratories. For instance, DURELASTO stands up under acids, alkalis, alcohol tests.* These tests prove that DURELASTO's resistance to these common enemies of finishes is "tops." Other tests have demonstrated that DURELASTO's resistance to heat and cold check is approximately double that of previously known pre-war wood finishes. These tests mean that DURELASTO is almost unbeatable when it comes to durability.

On your Product
DURELASTO *Means Added Sales Appeal*

Frankly, we feel that DURELASTO is going to go a long way toward solving some of your most pressing wood product finishing problems. We'd like the opportunity of proving it to you—right now! Just drop us a line on your business letterhead.

DURELASTO'S VITAL STATISTICS

DURELASTO comes in liquid plastic form, in clear, white and colors. It's shipped in 50% solids in the clear; solids in the white and colors run as high as 75% and can be reduced to about 35% solids in the clear for spray and roll-coat application. One coat over DURELASTO sealer gives a full-bodied finish—curing perfectly in from one to two hours at 135°F to 150°F. Colors have excellent hiding qualities; gloss and clear flats are brilliant.

ZAPON
REG. U. S. PAT. OFF.

ZAPON DIVISION
ATLAS POWDER COMPANY

Eastern Sales: Stamford, Conn. • Western Sales: No. Chicago, Ill.

INDUSTRIAL PRODUCT FINISHES . . . *Doing Tomorrow's Job Today!*

TWENTY-FIRST YEAR OF PUBLICATION

Industrial FINISHING

W. H. ROHR, Editor E. A. DOSCH, Assoc. Editor

Vol. XXI, No. 2 DECEMBER, 1944 $2.00 a Year

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New Items? YES...

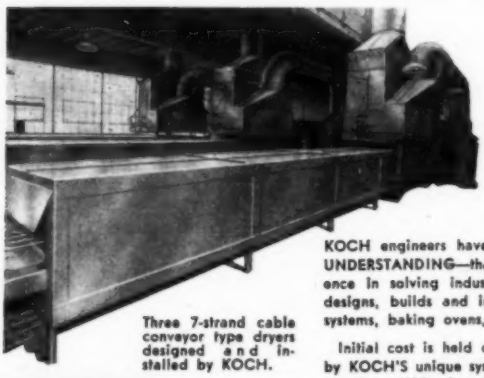
PLENTY OF THEM!!!

Tell us your finishing problems and we will tell you about the new items we have developed to solve them.

V. J. DOLAN & COMPANY, INC.

Manufacturers "Unquestionable Quality" Industrial Finishes

1830-32 NORTH LARAMIE AVENUE CHICAGO, ILL.



Three 7-strand cable conveyor type dryers designed and installed by KOCH.

SPECIAL PURPOSE OVENS... *by* KOCH

KOCH engineers have the KNOWLEDGE—and the UNDERSTANDING—that comes from long experience in solving industrial oven problems. KOCH designs, builds and installs complete conveyorized systems, baking ovens, dryers, etc.

Initial cost is held down and efficiency increased by KOCH'S unique system of standardized-unit construction. Write for details.

GEORGE KOCH SONS, INC. *Industrial Equipment*

2118 PENNA. ST., EVANSVILLE 4, IND.

Letters from Readers

Clear Lacquer for Meat Tins

We notice that you are very helpful to queries and problems which some of your subscribers submit to you. We would appreciate it very much if you can give us any information or give us the names and addresses of manufacturers of the synthetic water-resistant clear finishing lacquer which is applied to the decorated tins of "Spam," "Mor," sausage meat, etc., which comes to this country from America.

We are intimately connected with the decorated-tin-box trade and could use large quantities of this lacquer if supplies could be made available over here.—I. S. & Co., Aberdeen, Scotland.

Hammered-Effect Enamels

We are interested in obtaining samples and information regarding hammered finish enamels.—STOVE CO.

Furniture Finishing Conveyor

Please furnish names and addresses of furniture finishing conveyor manufacturers.—B. FURN. CO.

Bleaching Basswood

We are interested in obtaining information as to the bleaching of basswood and maple.—W. Mfg. Co.

A B C Blocks

We have started the manufacture of A B C blocks, using the silk-screen stencil method for printing and decorating, and certified dyes for coloring. We would like to know if you have any information on the wax tumbling for polishing. Also, we want to know where to get engraving machines and dyes for stamping the figures.—D. Co.

Painting Welded Joints

We refer to your May 1944 edition of INDUSTRIAL FINISHING. On page 62, under the heading, "Painting Welded Joints," we find that the trouble caused by "berries" of metal (produced by arc-welding) may be headed off by a spatter-proofing liquid that can be applied by brush or by spray, along the edges of metal parts to be welded.

If it is possible for you to give us the information needed to obtain this liquid, we would be very much pleased, for we are having some difficulty with spattering of metal and the possible forming of "berries" where close fits are concerned.—T. & E. Co.

The material referred to in the article you mention is a product of Acme White Lead & Color Works, 8250 St.-Aubin Ave., Detroit, Mich.—ED.

Salt-Spray Testing Outfit

We will appreciate your telling us who manufactures a small salt-spray test outfit.—V. S. CORP.

Silk-Screen Stenciling

We understand that there was an article in your May issue regarding a silk-screen graining system on fiber board or Masonite panels. We would appreciate any information that you can give us as to the manufacturer who handles this process, so that we may communicate with them direct.—(Shipbuilding Co.)

We note, on page 6 of the October issue of INDUSTRIAL FINISHING, where someone is requesting information on silk-screen work. We also would appreciate any available information.—M. Co. (Oil Purifiers).

Stresscoat Lacquer

As a last resort I would like to inquire of you who is the manufacturer of Stresscoat lacquer. As I understand it, Stresscoat lacquer is to be applied on gray iron castings to indicate possible fractures under stress.—Technical Director for Mfr. of Finish Materials.

"Stresscoat" is a registered trade name used by Magnaflux Corp., Chicago, Ill., to identify its patented

BLACK-MAGIC

1-BATH BLACK OXIDE FINISH FOR STEEL

Gives all steels except stainless a rich, deep black that will not rub off. Simple to work—operates at 300° F. An effective bond for paints, lacquers, enamels. There are also Black-Magic baths for zinc base die castings and thin sheet fabrications, and for copper, brass and cadmium. Ordnance approved. Send for samples.

GAGES PROCESSED WITH BLACK-MAGIC

(Pat. No. 2,355,007)

BETRAY WEAR AUTOMATICALLY

Penetrates .0001". Adds nothing to the dimensions. Gage can be safely used until bright metal shows! Reveals defects in threads and vital surfaces. Also a sweat-proofer. Write for details.

SILCO

—a new glass-base finish for metals. Highly resistant to corrosion, abrasion, and impact. Stands heat up to 1000° F. Excellent protection for exhaust manifolds, stove linings, electric heating units, etc. Inert to mild alkalis, most acids. Non-priority. Samples on request.

"BLACK MAGIC" SALTS

•

"WITCH DIP" FINAL FINISH

•

SILCO VITREOUS-TYPE FINISH

MITCHELL-BRADFORD CHEMICAL COMPANY

MODERN METAL FINISHES

2446 P. MAIN ST., Stratford, P. O. BRIDGEPORT, CONN.

methods, materials and equipment for use in stress analysis of metals. Stresscoat lacquer is a brittle lacquer for coating metal parts to be tested for performance under various strains. As we understand it, any distortion of the metal under strain will cause checks or cracks to appear in the brittle lacquer coating, the cracks indicating just where the distortion occurs, and to what extent.—ED.

I. F. Articles in Demand

If it is convenient, we would appreciate receiving from you a tear sheet of the article: "Infra-Red Paint Drying," which appeared in the July 1942 issue of INDUSTRIAL FINISHING. Your cooperation in fulfilling our request would be very much appreciated and will aid us immeasurably in our market research investigation.—L. L. (Advertising).

We would greatly appreciate receiving, at your earliest convenience, two copies of Jerome M. Bialosky's article on "Rust Resistant Coatings for Steel Products," as per page 5 of the Metals Review.—D. E. (Hydraulic Equipment)

Am interested in obtaining tear sheets of articles beginning in the May 1944 issue of INDUSTRIAL FINISHING, entitled, "The Theory and Use of Zinc Chromate Primers," by Paul O. Blackmore.—W. P. G. (Process Development Engineer).

School Wants Information

Our school for painters is in need of some up-to-date instructional material dealing with composition of paints, lacquers, varnishes, fillers and colors. Our instructional materials laboratory is equipped to reproduce copy, photographs, drawings, tables, etc. The students attending these classes are, in most instances, now working in local war industries including seven shipyards. Any information or help you can give us will be greatly appreciated.—M. O. V. Analyst, Instructional Materials Laboratory, War Production Training.

One-Way Windows Again

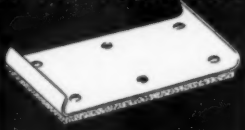
On page 6 of the October issue there is an inquiry in regard to windows of one-way transparency. This type of mirror can be had from a number of mirror concerns who use the Peacock spray method of depositing silver on glass.

It must be borne in mind that these mirrors are not very durable, due to the fact that the silver is very thin

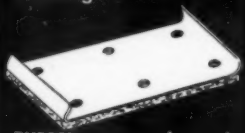
UP PRODUCTION!

. . . USE SANDING PADS THAT FIT YOUR JOB

Yes, it's "EASY" SANDING



FELT—wet sanding and rubbing.



RUBBER—general sanding, rubbing, polishing, deburring.

SPONGE RUBBER for curved surfaces.

For working concave surfaces.

THE EASY SANDER detachable bottom plate provides a simple, instant, snap-action method for attaching the type sanding pad to fit the job. Sanding pads of correct type assure *maximum efficiency* on flat or curved surfaces, wet or dry work. Write for details.

DETROIT SURFACING MACHINE COMPANY

7434 W. Davison Detroit 4, Mich.

Easy

RECIPROCATING ELECTRIC SANDER

SAFEGUARD YOUR SPRAY BOOTHS

Apply Wyandotte Spray Booth Coating *first* for quicker removal later of layers of inflammable paint. It takes only a thin coating to make cleaning easier, speedier, more economical. Write Wyandotte Chemicals Corporation, J. B. Ford Division, Wyandotte, Michigan, for full details!

Wyandotte F-100* will help cut your floor-cleaning costs. Even heavy soil disappears when this remarkable compound gets to work!

*Registered Trademark

TECTYL ***helped***

to salvage the Squalus

The hull and engines of the submarine Squalus, long immersed in sea water, were flushed with Tectyl 511, which pushes every trace of water off of metal and SEALS the surface against rust and corrosion. One of the five specialized types of Tectyl will solve your own special rust-prevention problem. Easy to apply and remove, economical to use—Tectyl protection is *positive*. Write now, indicating your corrosion problem, and we will send you Tectyl bulletin with complete application data.

TECTYL
STOPS RUST
VALVOLINE OIL COMPANY
456 Culvert St. Cincinnati 2, Ohio
Refinery at Butler, Pennsylvania
General Offices, Cincinnati Ohio

and in most cases, for best effect, not protected by a coating of any kind. We believe that the Pittsburgh Plate Glass Co. can direct your inquirer to a source of supply.—J. W. & SONS.

Paint Testing Panels

Several years ago we bought, from some concern in Indianapolis, oak, gum, mahogany nad other kinds of panels about 3x5-in. for paint and varnish testing purposes. Do you know if this concern is still in business or do you know of anyone from whom we could purchase such panels?—D. D. Co.

We are not able, at the moment, to identify the company about which you are inquiring. Probably several concerns in your locality (St. Louis, Mo.) could and would be glad to fill your order promptly.—ED.

Hot Lacquer Again

In your October issue you refer to the names of concerns able to supply information on hot lacquer finishes. We would be very much obliged if you would let us have a list of these names.—C. A. Co. (Radios).

Recently we noticed in your November issue, on page 8, that a customer was interested in hot lacquers. We hope that you have passed on our name regarding this inquiry, as we are one of the originators of hot lacquers. —THE LOWE BROTHERS CO.

Safety from Fire, Accidents; New Organization

A new industrial research and development organization, the Pyrene Development Corp. of Newark, N.J., has been formed as a subsidiary of the Pyrene Mfg. Co., also of Newark.

Officers of the new organization, drawn from executives and directors of the parent company, are Charles G. Durfee, president, Edward J. Waring, vice-president, and Edward A. Clapp, secretary and treasurer.

The new organization will not only carry out research on fire-extinguishing equipment and compounds but will also work in the larger field of safety devices and other means for conserving life, health and property. Ideas from the public will be welcomed. An immediate project is the extension of the development of systems and equipment for employing the mechanical foam principle in fire extinguishment.

STILLE-YOUNG

★ LABORATORY ANALYSIS
★ PRACTICAL EXPERIENCE
★ TRAINED SERVICE REPRESENTATIVES

Can be of help to you in solving finishing problems whether of production or maintenance.

Lacquers Fillers Stains

Enamels Paints

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2300 North Ashland Avenue • Chicago 14, Illinois

THE LILLY COMPANY

HIGH POINT, N. C.

more BONDS to Fly more B-29s!

EVEN though the 6th War Loan Drive is over, this is no time to slacken the buying of War Bonds. It's going to take a lot of Bonds to build all the B-29s we'll need to repay the Japs for their sneak attack on Pearl Harbor, just three years ago. We've made a start and if we all continue to buy Bonds and do our part we'll finish right.

Buy more LILLY FINISHES . . . .

Yes, and you'll finish right if you buy more LILLY'S DEPENDABLE FINISHES. Over 14 years ago we adopted the slogan "With the right finish—you'll finish right" and since that time we have been making specific finishes for specific products and purposes. For a finishing material made to fit your particular product, get in touch with any of the Lilly plants listed below.*

*Indianapolis, Indiana *High Point, N. C. *Gardner, Mass.

LILLY VARNISH COMPANY
INDIANAPOLIS, IND.

HARDWOOD FINISHING HEADQUARTERS

SINCE 1888

TALLOW	10-Lb.	5-Lb.	Less
TERRA VERTE	10-Lb.	5-Lb.	Less

THINNER

Banana No. 1	Bbl.	5-Gal.	1-Gal.	¼-Gal.	⅛-Gal.
Lacquer	Bbl.	5-Gal.	1-Gal.	¼-Gal.	⅛-Gal.

TRIPOLI

Powder	25-Lb.	10-Lb.	Less
Composition	25-Lb.	10-Lb.	Less

TURPENTINE

Pure	Drums	5-Gal.	1-Gal.
Imitation	Drums	5-Gal.	1-Gal.

VARNISH REMOVER

Behlen Liquid	Bbl.	5-Gal.	1-Gal.	½-Gal.	¼-Gal.	⅛-Gal.
Zoff Liquid	Bbl.	5-Gal.	1-Gal.	½-Gal.	¼-Gal.	⅛-Gal.
Zoff Cream	Bbl.	5-Gal.	1-Gal.	½-Gal.	¼-Gal.	⅛-Gal.
Fire Fly (fireproof)	Bbl.	5-Gal.	1-Gal.	½-Gal.	¼-Gal.	⅛-Gal.

VARNISH

Rockhard Finish (for Bar Tops)	5-Gal.	1-Gal.	¼-Gal.	⅛-Gal.	
Behlen Table Top	5-Gal.	1-Gal.	¼-Gal.	⅛-Gal.	
Behlen Cabinet Polishing "Crack"	5-Gal.	1-Gal.	¼-Gal.	⅛-Gal.	
Behlen Cabinet Rubbing "A"	5-Gal.	1-Gal.	¼-Gal.	⅛-Gal.	
Behlen Furniture Varnish No. 1	5-Gal.	1-Gal.	¼-Gal.	⅛-Gal.	
Behlen Coloring Mahogany (Light, Dark, Rosewood)	5-Gal.	1-Gal.	¼-Gal.	⅛-Gal.	
Behlen Picture	5-Gal.	1-Gal.	¼-Gal.	⅛-Gal.	

SYNTHETIC VARNISH—BEHLOID

Behlen Spar	5-Gal.	1-Gal.	¼-Gal.	⅛-Gal.
Behlen Floor	5-Gal.	1-Gal.	¼-Gal.	⅛-Gal.
Behlen Trim	5-Gal.	1-Gal.	¼-Gal.	⅛-Gal.

WALNUT EXTRACT ..... 25-Lb. ..... 5-Lb. ..... 1-Lb.

WHITING

Extra Gilders Powdered	Bbl.	100-Lb.	25-Lb.	Less
Paris	Bbl.	100-Lb.	25-Lb.	Less
Piano *	Bbl.	100-Lb.	25-Lb.	Less
Commercial Powder	Bbl.	100-Lb.	25-Lb.	Less

WAX—LIQUID

Non Rubbing "Factual Finish"	Bbl.	5-Gal.	1-Gal.	1/4-Gal.	1/8-Gal.
Behlen Blue Label Liquid		5-Gal.	1-Gal.	1/4-Gal.	1/8-Gal.
Behlen Blue Label, No Rubbing		5-Gal.	1-Gal.	1/4-Gal.	1/8-Gal.
Behlen Flex Wax		5-Gal.	1-Gal.	1/4-Gal.	1/8-Gal.

WAX—PASTE

Behlen Blue Label, Natural	30-Lb.	4-Lb.	2-Lb.	1-Lb.
Behlen Blue Label, Yellow	30-Lb.	4-Lb.	2-Lb.	1-Lb.
Behlen Flex Wax	30-Lb.	4-Lb.	2-Lb.	1-Lb.

WAX—POWDERED

Sifter Top Can ..... 100-Lb. ..... 50-Lb. ..... 25-Lb. ..... 1-Lb. Can

WAXES—NATURAL

Bay Berry	25-Lb.	10-Lb.	5-Lb.	1-Lb.
Beeswax, White	25-Lb.	10-Lb.	5-Lb.	1-Lb.
Beeswax, Yellow	25-Lb.	10-Lb.	5-Lb.	1-Lb.
Cable, Black	25-Lb.	10-Lb.	5-Lb.	1-Lb.
Carnauba	25-Lb.	10-Lb.	5-Lb.	1-Lb.
Ceresine	25-Lb.	10-Lb.	5-Lb.	1-Lb.
Japan	25-Lb.	10-Lb.	5-Lb.	1-Lb.
Ozokerite	25-Lb.	10-Lb.	5-Lb.	1-Lb.
Paraffin	25-Lb.	10-Lb.	5-Lb.	1-Lb.

ZINC

White French Dry	25-Lb.	10-Lb.	5-Lb.	1-Lb.
Stearate	25-Lb.	10-Lb.	5-Lb.	1-Lb.
Sulphate	25-Lb.	10-Lb.	5-Lb.	1-Lb.

Illustrated catalogue of complete finishing materials that will take care of your finishing requirements.

H. Behlen & Bro., Inc., 10 Christopher St., N. Y. C. 14

This Book May Help You Pick

THE FINISH FOR YOUR POSTWAR PRODUCTS

This Book May Help You Pick

THE FINISH FOR YOUR POSTWAR PRODUCTS

Polymerin Finish Dries Faster, Stays Beautiful Longer!

"The Facts on Polymerin" describes the two-way competitive advantages you can gain by finishing your postwar products with durable, speed-bake Polymerin.*

Polymerin is an organic baking enamel with unusual properties of durability and resistance . . . properties which may be varied to meet the individual requirements of such products as refrigerators, stoves, washing machines, bicycles, lamps, fluorescent reflectors, artificial tile, kitchen and under-sink cabinets, gasoline pumps, venetian blinds, vending machines and other appliances.

Polymerin stays beautiful longer! Impartial tests have shown that Polymerin is nine times harder to chip than ordinary enamels. And Polymerin—the original speed-bake finish—offers production advantages, too. For Polymerin's faster drying results in savings which can help you keep your finishing costs low!

Regular Polymerin is not available now, *but it is time now to discover how* Polymerin *can help you make and sell a better product after the war!* Use the coupon below to get your free copy of "The Facts on Polymerin"; a 32-page booklet which presents clearly and factually the sales and production advantages of a Polymerin finish. This information-packed booklet is yours for the asking . . . send for a copy today! **Reg. U. S. Pat. Off.*

POLYMERIN

The Original Speed-bake Finish

A PRODUCT OF AULT & WIBORG

DIVISION OF INTERCHEMICAL CORPORATION

Ault & Wiborg Division of Interchemical Corporation, Empire State Bldg., New York 1, N.Y. C-3

Please send, without obligation, a free copy of "The Facts on Polymerin"—the book that shows how a Polymerin finish can increase sales and reduce finishing costs.

*Name*_____

*Company*_____

*Address*_____

LICKS CORROSION

plied to metal by dip or spray,

have been subjected to corrosive

plied to metal by dip or spray, giving it an enduring protective armor against corrosion by acids, salt spray, humidity, steam and other demons of destruction.

have been subjected to corrosive liquids and fumes without deterioration for over 10,000 hours —more than a year. Available clear and in colors for industrial applications.

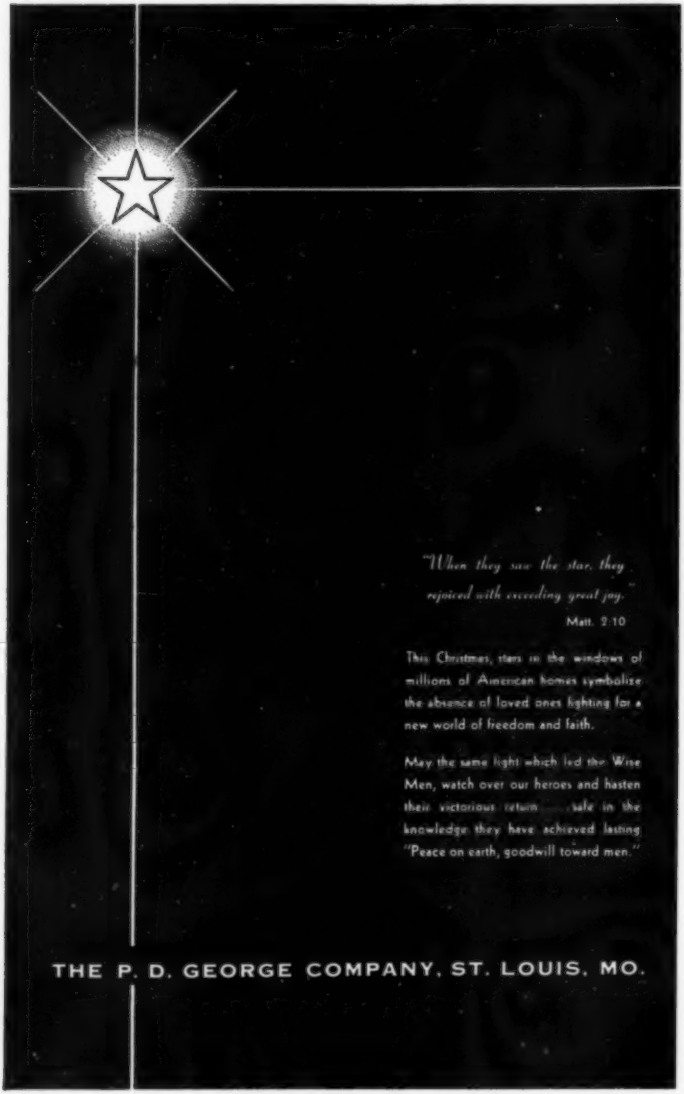
Send for our Research Laboratory Release — Technical Bulletin I.

STANDARD VARNISH WORKS

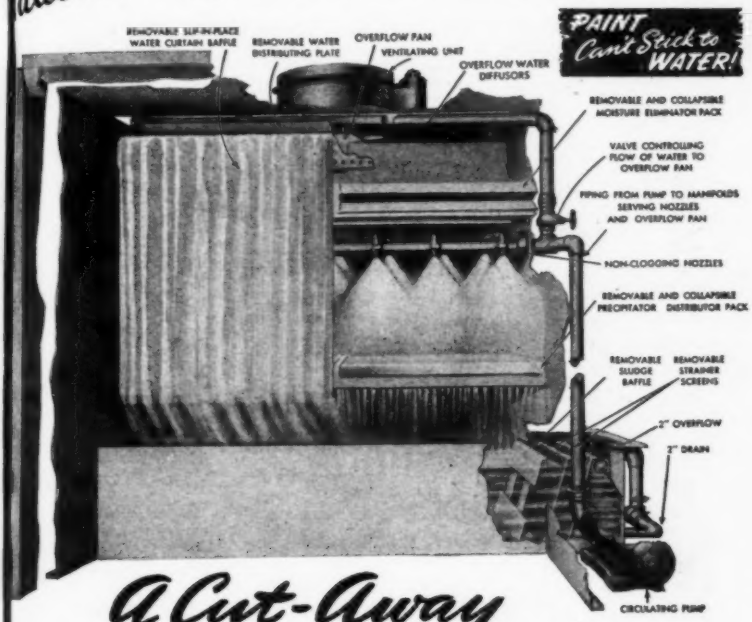
2600 RICHMOND TERRACE
STATEN ISLAND, N. Y.

2600 FEDERAL STREET
CHICAGO, ILLINOIS

SINCE 1870


"When they saw the star, they rejoiced with exceeding great joy."
Matt. 2:10
This Christmas, stars in the windows of millions of American homes symbolize the absence of loved ones fighting for a new world of freedom and faith.
May the same light which led the Wise Men, watch over our heroes and hasten their victorious return ... safe in the knowledge they have achieved lasting "Peace on earth, goodwill toward men."
THE P. D. GEORGE COMPANY, ST. LOUIS, MO.

Paasche Water Wash Airfinishing Booths


PAINT Can't Stick to WATER!
REMOVABLE SLIP-IN-PLACE WATER CURTAIN BAFFLE
REMOVABLE WATER DISTRIBUTING PLATE
OVERFLOW PAN VENTILATING UNIT
OVERFLOW WATER DIFFUSORS
REMOVABLE AND COLLAPSIBLE MOISTURE ELIMINATOR PACK
VALVE CONTROLLING FLOW OF WATER TO OVERFLOW PAN
PIPING FROM PUMP TO MANIFOLDS SERVING NOZZLES AND OVERFLOW PAN
NON-CLOGGING NOZZLES
REMOVABLE AND COLLAPSIBLE PRECIPITATOR DISTRIBUTOR PACK
REMOVABLE SLUDGE BAFFLE
REMOVABLE STRAINER SCREENS
2" OVERFLOW
2" DRAIN
CIRCULATING PUMP

A Cut-Away Worth Studying

FOR BETTER RESULTS IN YOUR FINISHING DEPT.

Note here, some of the reasons why Paasche Water Wash Booths save cleaning time—conserve paint—and reduce fire hazards.

Exhausting air, bearing overspray, is drawn against water curtains, and solids are washed down into settling tank. Any paint particles remaining on precipitator pack are washed down by high velocity sprays of water. These packs direct the air uniformly through air expansion precipitating chamber and also prevent surging in the settling tank.

Note, too, removable and collapsible moisture eliminator pack, overflow water diffusers, and other features designed to prevent solids from being discharged to outside atmosphere and to minimize fire hazards.

And remember, it's not the first cost but the completely installed cost, that counts. For detailed information on Water Wash Booths and other Paasche Airpainting Equipment, write

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1917 Diversey Parkway Chicago 14, Ill.

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Paasche AIRPAINTING EQUIPMENT

pressure regulators, airconditioners for compressed air lines, air dusters and stripers.

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Formulated to meet the exacting demands of particular manufacturers of quality furniture, Artisan Fine Finishes are nationally known for their ability to bring out the utmost in the beauty of the wood, the artistry of the designer and the skill of expert craftsmen while at the same time meeting modern production requirements. An American-Marietta technical expert will gladly show you how Artisan Fine Finish can add more interesting eye and sales appeal to your products.
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The new principle which Hydro-Whirl has brought to industry combines with the proved advantages of wet precipitation a radical departure from the conventional design.

The extraordinary performances of the Hydro-Whirl in the leading plants of the country have demonstrated that this development deserves first consideration where the collection and safe handling of practically all industrial dusts and fumes present a problem.

We invite you to call in our engineers to discuss your plans whether you contemplate a new plant or expect to reconvert your present one. We shall be glad to help you either in an advisory capacity or to help lay out a complete processing system.

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HYDRO-WHIRL DUST COLLECTORS AND SPRAY BOOTHS—INDUSTRIAL OVENS, WASHERS AND VENTILATING SYSTEMS

AN OUTSTANDING DIPPING PRIMER

For 10 years O'Brien's Gray Primer No. 7062 has been a leader in the dipping method of industrial finishing. Extremely stable in the dip tank, it is a stand-out performer under lacquer, synthetic enamels and government specification finishes. Highly adhesive to metal, Gray Primer No. 7062 eliminates beading at the bottom of the drain, leaves a clean edge, and produces an applied film that's flexible, durable and salt-resistant. This primer has scored outstanding successes in many fields, including the automotive industry. Write us for the record of its wartime and peacetime achievements in industrial finishing.

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The Magnus All-Purpose Portable Cleaning Machine is based on a unique method of agitation in which the work is repeatedly raised and lowered *in* the cleaning solution, providing an energetic swishing action which insures better cleaning and greatly speeds the cleaning process.

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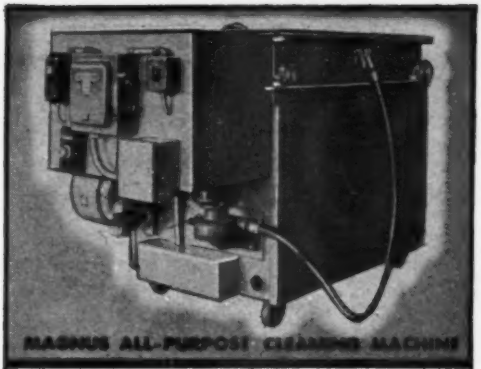
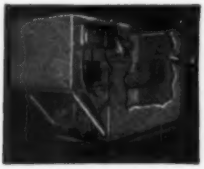


Machine without basket for soaking parts on racks or hooks.

Machine set up for spraying parts on racks or individually.

Machine with basket for soaking parts individually or in bulk.



Machine set up for spraying parts individually or in bulk on a grille.

Bulletin 3600 Tells the Complete Story

Write for this description of this unique machine and its applications. Prices range from $300 to $800, depending on capacity and type of heating provided.

Magnus

MAGNUS CHEMICAL COMPANY · 40 SOUTH AVENUE · GARWOOD, N. J.

CLEANERS·METHODS·MACHINES

Finishing Aluminum

BY ROBERT I. WRAY
Aluminum Research Laboratories
Aluminum Company of America

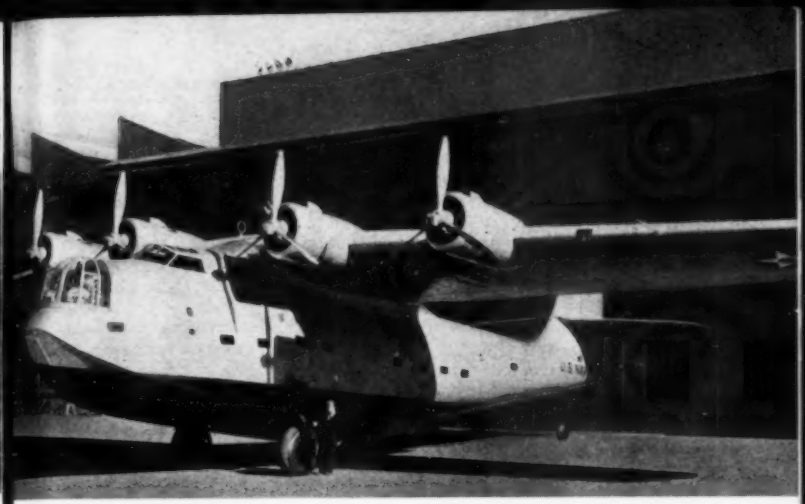
IN RECENT years so much has been said and written about the use of the light metals, and particularly aluminum, that the public has become aware of many of their applications in home, office, farm and factory. For most of these uses, some type of finish will be required to give the finished product an attractive appearance or to improve its serviceability. A variety of finishing methods is available, including simple mechanical treatments, such as polishing, wire scratch-brushing or sandlasting; chemical or electrochemical treatment; and painting. Frequently a combination of these methods is employed to accomplish the desired result.

In many cases, the use of paint constitutes the most economical method of decoration that can be employed, while in other instances paint is required to give protection to the surface. Paint is widely used in the decoration or protection of products made of aluminum and its alloys. The statement has been made that it is difficult to secure good paint adhesion on aluminum. This might be the result, of course, if the surface were not properly cleaned before painting.

Aluminum sheet, during the process of rolling, usually acquires a thin film of rolling oil on its surface. Also, sheet is sometimes oiled to prevent marking during shipment. This oil film must be

Illustrations: (Above)—Overland busses of new aluminum are carefully prepared for painting, primed with zinc chromate primer, and finished with surfacer and enamel or lacquer in line with automotive practice.

(Opposite page)—Special surface treatments and types of coatings are used to protect aluminum aircraft.



...m with Paint Coatings

removed if good paint adhesion is to be obtained. While aluminum sheet that has been annealed or heat treated is practically free from oil, further surface treatment is necessary to secure the best paint adhesion. Properly treated aluminum and aluminum alloys show as good paint adhesion as any other metal — in fact paint adhesion to aluminum is better than to many other metals, when proper method of surface preparation, to be described later, are employed.

Several Aluminum Alloys Available for Selection

Aluminum alloys may be divided into two general classes — those subject to heat treatment and those not heat treated. Commercially pure aluminum, 2S, falls in the latter class; other such alloys are 3S and 52S. In general, these alloys show somewhat better paint adhesion than some of the heat-treatable alloys. These heat-treatable alloys have high strength and are therefore used for structural members of trains, busses, aircraft, etc., and usually require paint protection in these applications. Alloys of this type are 17S, 24S, and 75S. *(Turn to page 26)*

Presenting some timely and authoritative facts about the cleaning and proper treatment of aluminum surfaces previous to painting or finishing. The second part of this article, to appear next month, takes up various types of primers and finish coatings to use on the different aluminum products and for special requirements.

Alclad 17S, Alclad 24S, and Alclad 75S, as well as the heat-treatable alloys containing magnesium and silicon, such as 53S and 61S, behave in much the same manner as 2S with regard to paint adhesion and are frequently used without paint protection. With proper surface treatment, the difference in paint adhesion to the different alloys becomes less marked, although paint performance is usually better on 2S and 3S and the Alclad materials than on the "bare" heat-treatable alloys, such as 17S or 24S, because of the inherently better resistance to corrosion of the former.[1]

Surface Preparation—
Sandblasting; Wire Brushing

Methods for treating aluminum surfaces for painting may be grouped into three classes, namely 1) mechanical methods, 2) solvent methods, and 3) chemical or electrochemical methods. Sometimes combinations of these are employed for special applications. The type of service required will govern, in large measure, the selection of the surface treatment to be used.

Mechanical methods of surface treatment are employed only under special conditions of service. Surface roughening is ordinarily not necessary in order to secure good adhesion. Of the various mechanical treatments, sandblasting is the most effective in promoting adhesion on surfaces that are subjected to considerable vibration or stress, such as might be encountered on busses, streamlined trains, etc. It cannot be used on light-gage sheet because of the danger of warping the metal but is sometimes employed on heavy sheet, castings, extrusions and rolled shapes. Even here only a mild sandblasting treatment is recommended. Silica sand of from 40 to 80 mesh is suggested, using an air pressure of 85-lbs. per square inch with a ½x3-in. nozzle. The nozzle should be held about 12-in. from the work. This will produce a fine even sandblasted surface without removing an excessive amount of metal.

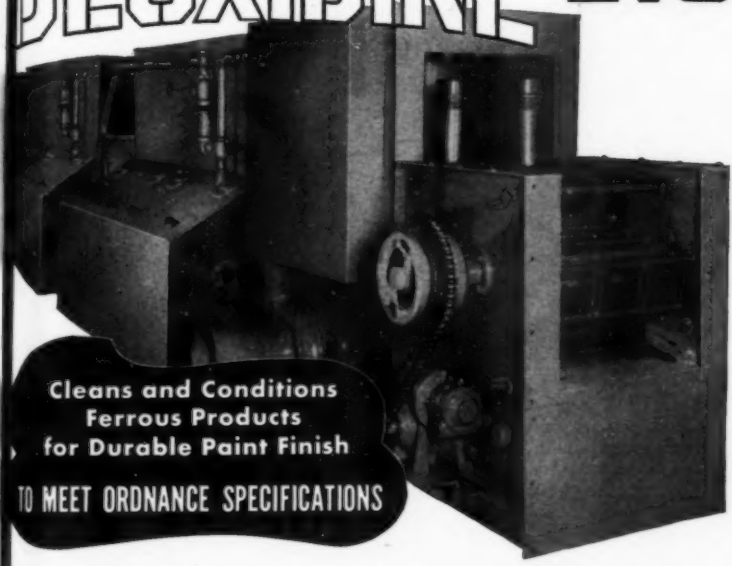
Scratch-brushing is sometimes employed to give a slightly roughened surface. This may be accomplished by means of a hand scratch-brush or a motor-driven rotary wire brush; the latter is much more effective. Hand sanding also will slightly roughen the surface. When scratch-brushing or hand sanding are used, a preliminary cleaning treatment is necessary to remove dirt and grease.

Rayon spinning buckets of aluminum are well protected against chemical attack by means of heat-reactive phenolic resin coatings.

Petroleum Solvents;
Solvent Vapor Degreasing

Solvent cleaning of the metal surface may be accomplished in a variety of ways. The simplest but least effective method is by hand cleaning with a swab or brush. Grease, which is present on the surface, may be merely diluted and spread in a thin uniform film over

DEOXIDINE 210



Cleans and Conditions Ferrous Products for Durable Paint Finish

TO MEET ORDNANCE SPECIFICATIONS

DEOXIDINE 210 not only cleans efficiently, but at the same time properly conditions the metal surface to meet the exacting requirements of Army Specifications AXS-1245 (Grade 1) Finish (when used as directed in ACP Technical Service Data Sheet No. 3-2-210-2.)

The ability of this phosphatic material to properly condition the surface of the many ordnance parts, at the same time it removes cutting oils, simplifies the equipment required. A three stage power washer is all that is needed to simultaneously *complete* both *cleaning* and *conditioning* operations. The equipment may be constructed of mild steel throughout—stainless steel is not required.

Large volume production of large or small work can be handled continuously and rapidly by the effective **DEOXIDINE 210** process. The simplicity and efficiency of this process adapts it, not only to the cleaning and conditioning of present war materials, but also to the cleaning of postwar metals as well.

The detergent properties of **DEOXIDINE 210** are superior to alkali cleaners in most instances and the surface produced greatly improves paint adhesion and durability.

There are other types of DEOXIDINE suited to varying requirements in metal cleaning and for application with brushes or in immersion tanks as well as spraying in power washers.

The experience of ACP Technicians is at your service to recommend the DEOXIDINE and method of application best suited to your needs.

Manufacturers of Inhibitors & Metal Working Chemicals

AMERICAN CHEMICAL PAINT CO.

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Note: West Coast Plants may address inquiries and orders for prompt delivery to: Leon Finch, Ltd., 728 East 59th St., Los Angeles, Calif.

American Chemical Paint Company, Ambler, Pa.
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Address_____

B-12

CHEMICALS ACP PROCESSES

the surface instead of being removed. Solvents commonly used for this type of application are mineral spirits, or other petroleum solvents which have a high-flash point. Another modification of solvent cleaning employs the dip tank. This method has the objection that the solvent in the tank, unless frequently changed, soon becomes useless because of the grease dissolved from the surface of the metal.

Solvent vapor degreasing overcomes most of the objections to solvent cleaning. The cleaning is carried out in a series of tanks, usually three in number, enclosed in a deeper tank. The first two inner tanks contain hot solvent. The most commonly used solvent is trichlorethylene, suitably stabilized to prevent decomposition. The third and final tank contains a small amount of the same solvent maintained at a sufficiently high temperature to keep the upper portion of the tank filled with the solvent vapors.

Parts to be cleaned are first immersed in the solvent in the first tank for about one minute, then removed, drained, and immersed in the second tank which contains cleaner solvent. This is really a rinsing operation and requires only about 20 seconds. The parts are then introduced into the solvent vapor in the third tank for about 20 seconds. The vapor condenses on the parts and washes the grease from them. They are slowly withdrawn and held above the vapor for an equal period of time, and finally above the large tank in the air for about a minute. The total cleaning cycle requires about 3 minutes but can be varied, depending upon the size and shape of the parts to be cleaned.

Precautions to Take in Solvent Vapor Degreasing

Equipment has been devised to solvent-vapor-degrease coiled sheet continuously. One commercial installation has been constructed to handle 50-ft. per minute. When very large individual parts are to be treated, the economies of the process should be investigated before considering this method. The solvent used is comparatively expensive and the maintenance costs are frequently high.

In using vapor degreasing equipment, adequate ventilation should be provided to remove the excess vapor which is somewhat toxic. Care should also be exercised in handling the liquid. Frequent checks should be made to determine the stability of the solvent. New solvent additions must be made daily to compensate for "carry-out"; the solvent should be renewed frequently. Dirty solvent can be reclaimed by distillation. If these precautions are followed, satisfactory cleaning of the sheet or parts is accomplished.

Vapor degreasing is especially applicable as a cleaning method for use on flat sheet which is to be finished later by roller coating application, baked and fabricated. A typical example is found in the manufacture of aluminum seals and closures which are fabricated from coated flat sheet.

"Oven Cleaning" Sheet Aluminum

Another method of cleaning flat sheet, which may contain a film of oil, is known as "oven cleaning." The sheet is sheared to definite lengths and coated with solvent on a coating machine with the scraper bar loosened so that both sides of the sheet come into contact with the solvent. *(Turn to page 30)*

METL-PRIME is a new product now offered by Egyptian after exhaustive prove-up tests. As its name indicates it is a primer for metal.

Sprays on or Dips.

Air-dries dust free in 5 minutes; to handle, 10 minutes; to practical hardness, 20 to 30 minutes.

Gives hard adhesive satin finish—no sanding needed before lacquer or other top coating.

METL-PRIME won't lift. It won't bleed through even a white lacquer enamel top coat.

This new Egyptian product possesses all the inherent quality of the Egyptian line. Meets today's need; fits admirably into post-war tomorrow.

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ROCKEFELLER CENTER, NEW YORK 20, N. Y.

EGYPTIAN FINISHES

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One solvent that has had successful use commercially over a 10-year period is a petroleum hydrocarbon solvent having an initial boiling point of 160°F. and an end point of 380° to 382°F. The sheet then travels by belt feed to a conveyor on which it moves in a vertical position through a tunnel conveyor oven, having an air temperature, at the peak, of 420° to 450°F. The sheet remains at the peak temperature for only about five minutes, although the total time required is 17 to 24 minutes, depending upon the type of oven.

In this process the solvent apparently dilutes the grease on the surface of the sheet and spreads it out in a thin film which is more readily burned off by the heat of the oven. This method is well adapted for cleaning sheet which is to be machine coated and fabricated.

Chemical Methods of Cleaning

Inhibited Alkaline Cleaners

Alkaline cleaners, which have been inhibited to prevent attack of the aluminum, are sometimes employed to remove grease from the surface of the metal. Sodium carbonate or trisodium phosphate, inhibited with sodium disilicate, are most commonly used for this type of cleaning. One satisfactory mixture consists of 70% trisodium phosphate and 30% sodium disilicate. A concentration of 2 to 6-oz. per gallon of water may be used, depending somewhat upon the condition of the metal.

Parts to be cleaned are immersed in this solution, maintained at a temperature of 160°F., for about three minutes after which they are thoroughly rinsed and dried, unless a subsequent acid dip is to be employed. There are a number of proprietary cleaning compounds of this type on the market which are satisfactory for use on aluminum. Before using these cleaners, however, they should be tested to make sure they will not attack the metal.

. . . . Followed by Acid Treatment and Rinsing

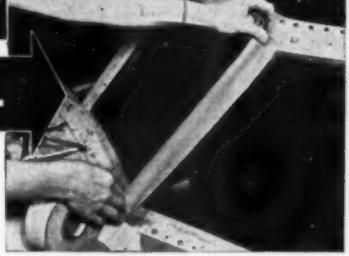
The use of inhibited alkaline cleaners is usually followed by a dilute-acid treatment since alkaline cleaners, by themselves, do not give a surface entirely satisfactory for painting except in special cases. The acids commonly employed are chromic acid and phosphoric acid. Solutions containing 5% of either of these acids may be used. In the case of the chromic acid solution, it is maintained at a temperature of 120° to 140°F. while the phosphoric acid solution may be used at room temperature.

The parts, after treatment in the inhibited alkaline cleaner and rinsing, are immersed in the acid solution for a period of about five minutes, after which they are thoroughly rinsed in clean water and dried. They should be painted as soon after drying as possible to prevent contamination. The chromic acid dip, following an inhibited alkaline cleaning, has been rather widely used for treating aircraft parts prior to painting; for this application it is sometimes referred to as "chromodizing."

Other Surface Preparation Treatments

Another type of acid treatment involves the use of aqueous solutions of phosphoric acid with alcohol or other organic grease solvents, together with wetting agents, emulsifying agents, etc.; sometimes chromates are also add-

with FABSEAL



CREWMEN of Uncle Sam's bombers, flying the "humps," now enjoy the comfort of *pressurized* cabins. Fabseal, developed by the Paint Division of the Pittsburgh Plate Glass Company, plays an important role in maintaining cabin pressure for high altitude flying. It "pressure seals" all seams, windows and doors, thus enabling delicate mechanical pressurizing equipment to function at top efficiency.

Fabseal is an impregnated fabric tape, resistant to water, gasoline and oil. It is treated to prevent capillary seepage of fluids when compressed between two riveted or bolted members. In addition, it remains flexible in temperatures far below 0° F.

Easy to Apply—Fabseal is easy to handle and can be applied to any metal and wooden section of a plane. It comes in rolls with an inter-leaf separating the fabric layers.

The Paint Division of the Pittsburgh Plate Glass Company also supplies vast quantities of aircraft finishes for all types of planes. Our long experience in the field can frequently save you time and money.

PITTSBURGH PLATE GLASS COMPANY, Industrial Paint Division, Pittsburgh, Pa. Factories: Milwaukee, Wis.; Newark, N. J.; Houston, Texas; Los Angeles, Calif.; Portland, Ore. Ditzler Color Division, Detroit, Mich. The Thresher Varnish Co., Dayton, O.

PITTSBURGH *Industrial* FINISHES

PITTSBURGH STANDS FOR QUALITY PAINT AND GLASS

ed. The solution may be brushed or swabbed on the surfaces to be cleaned, or the parts may be dipped in a tank of the solution. In either case, the solution should be allowed to remain in contact with the metal surface for five to ten minutes and then thoroughly rinsed with clean water. This is one of the most effective of the simple chemical treatments. Apparently a thin film of aluminum phosphate forms on the surface, which is quite inert and which tends to protect the aluminum and promote paint adhesion.

When the surface to be treated is excessively oily or greasy it is desirable to first preclean it, either by means of solvent vapor degreasing or with an inhibited alkaline cleaner. The phosphoric acid solutions most commonly employed are proprietary mixtures which are available from a number of sources. They are supplied in concentrated form and ordinarily require the addition of two to three parts of water to one part of concentrated solution, for satisfactory application. A suggested formula for making a solution of this kind is also given in U. S. Army Corps. of Engineers Specification T1184-D as follows:

Butyl alcohol	(by volume)	40%
Isopropyl alcohol		30%
Phosphoric Acid (85%)		10%
Water		20%

For severe service conditions, except flat sheet which is to be subsequently fabricated, the formation of an oxide coating on the surface of the metal provides the best surface preparation for the painting of aluminum. Oxide coatings may be produced either by certain chemical treatments or by anodic oxidation.[2] The oxide coatings produced by chemical means are thinner and more porous than anodic oxide films but are generally simpler and cheaper to apply. A preliminary cleaning treatment is usually necessary to remove grease and oil before applying these coatings; solvent vapor degreasing or the use of an inhibited alkaline cleaner is usually sufficient.

Oxide Coatings; Alrok Alumilite Process

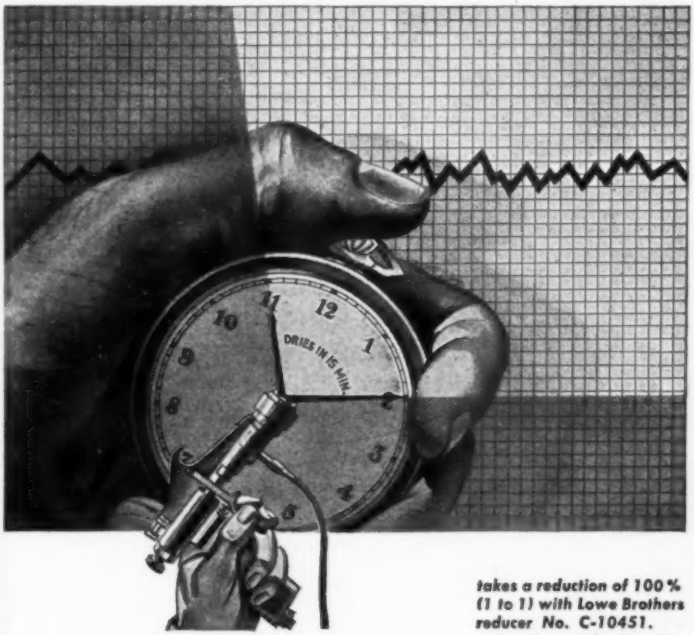
One coating process comprises oxidation by immersion in a hot dilute solution of sodium carbonate and potassium dichromate for about ten to 20 minutes, followed by a water rinse. The surface is then given a sealing treatment in hot 5% potassium dichromate solution* and given a final rinse. Coatings produced by this procedure are designated "Alrok"** coatings[3]; Alrok procedure No. 12 is commonly used on wrought products, while No. 714 is the designated procedure for castings. Other types of Alrok procedures have been developed for use under special finishes such as chemical-resistant coatings.

Some of the anodically produced oxide coatings are even more effective than the Alrok coatings as bases for paints. There are a number of electrolytes in general use for applying anodic coatings.[4] In the aircraft industry, anodic coating in a chromic acid solution has been widely used. The "Alumilite"† process generally employs sulfuric acid as the electrolyte, although other electrolytes are available. Alumilite treatment No. 205 is one of the best anodic coatings for use on wrought prod-

*U. S. Patent 1946152, Feb. 6, 1934.

**"Alrok" is a registered trademark of Aluminum Co. of America.

†The "Alumilite" process is protected by patents owned by Aluminum Co. of America.



Lowe Brothers Nu Spede Primer Prevents Production Line Slowdown

When WPB restricted the use of durable, fast drying Alkyd type primers except for Navy productions, many war-vital manufacturers faced the serious threat of a production line slow-down.

One seriously concerned mid-western manufacturer called upon Lowe Brothers. He asked if we could develop a primer which would keep up the finish quality and maintain the same production line speed of the Alkyd types.

Lowe Brothers answer was eminently satisfactory. It took the form of our emergency developed war-time Nu Spede Primer! Without sacrifice of durability or quality, this Lowe Brothers Nu Spede Primer dries in 15 min. to handle—ready for recoating in one hour. Furthermore, this Nu Spede takes a reduction of 100% (1 to 1) with Lowe Brothers reducer No. C-10451.

Result; production line speed maintained—and deliveries unaffected!

Perhaps you too can benefit by this latest example of Lowe Brothers continuing research and experience in solving finishing problems of every type. If not, remember, whatever your finishing problem, Lowe Brothers service is yours to call upon without obligation.

INDUSTRIAL SALES
THE LOWE BROTHERS CO.
DAYTON, OHIO

Lowe Brothers
WARTIME FINISHES *for Industry*
IN ACCORDANCE WITH U.S. GOVERNMENT SPECIFICATIONS

ucts as a base for paint while the No. 710 Alumilite treatment is widely used for castings. These coatings are both chromate sealed.* Anodic coatings are particularly recommended for use under the more severely corrosive conditions such as encountered by seaplanes.

REFERENCES are as follows:

[1]Edwards, J. D., and R. I. Wray—"Painting Aluminum and its Alloys"; Ind. Eng. Chem. 27 p. 1145 (1935)

[2]Edwards, J. D.—"Anodic and Surface Conversion Coatings on Metals"; Trans. Electrochem. Soc. 81 P. 341 (1942)

[3]Wray, R. I.—"Surface Preparation for Painting Aluminum Alloys on Aircraft"; Aviation 40 p. 83 (Oct. 1941)

[4]Edwards, J. D.—"Anodic Coating of Aluminum"; Monthly Review Am. Electroplates Soc. 26, 513 (1939)

In the 2nd and final installment of this article the author takes up primers and the several different types of protective and decorative coatings that are especially suited to various aluminum sheet stock to be cut and formed and fabricated to make new products.

Industrial Artist Uses Airbrush

AN engineering artist at Douglas Aircraft, Long Beach, Calif., recently finished a type of art painting that may prove to be revolutionary. Using an airbrush this artist-engineer turned out a beautiful work of art, incorporating the perspective and reflection of his subject.

This beautiful picture entitled "Candlelight" shows the way to a new type of art, with results that are amazing. The work is rich in overtones and depth. The reflections, made possible through the use of this medium, give the picture a realistic and restful effect.

The entire picture was sketched in the rough first; then the long patient work of airbrushing, instead of using an artist's paint brush, followed.

More of this airbrush artistry will be heard from in the future. The artist's technical and artistic skill, combined with an industrial tool—the airbrush—can turn out what a true artist might call Industrial Art.—J. CRUM.

A. H. Sanders Joins Enthone

A. Harry Sanders of New Britain, Conn., joined Enthone Co. on October 15 to become a sales engineer. He will work throughout Northern Connecticut and Western Massachusetts in servicing Enthone customers. From 1942 to October 15, 1944, he was Finishing Superintendent of North & Judd Mfg. Co., New Britain, Conn.

DeVilbiss Moves Cincinnati Office

The DeVilbiss Co., Toledo, Ohio, announces the removal of its Cincinnati District Sales Headquarters to 410 American Bldg., Central Parkway and Walnut St. These larger facilities will, the company believes, enable it to better serve the trade in the Cincinnati District.

Ferro Enamel Opens New York Office

The Ferro Enamel Corp., Cleveland, Ohio, announces the opening of a new sales office in New York City, effective November 1. The prospect of an early resumption of consumer-goods production, together with the large volume of postwar business that is anticipated, prompted the Ferro management to take this step, to better serve its many Eastern customers.

Ferro's new office, which will be located at 17 E. 42nd St., will be managed by W. H. Wilson, as Eastern Territory Manager. Mr. Wilson has long been identified with Ferro. Mr. Wilson and his organization will handle all of Ferro's many products in the porcelain enameling, ceramic and industrial finishing fields. Their territory will embrace New England and the Atlantic Seaboard States.

The answer to

YOUR PROBLEM

may be in

OUR FILE

We invite you to submit your urgent or difficult finishing problems to our staff of experts for quick action.

RANDOLPH

FINISHING PRODUCTS CO.

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Some New Techniques in Protective Coatings

New 1-coat finishing; plastic coatings; solvent-less finishes; hot-application techniques, including hot spraying, hot-melt dipping, flame-spraying; special high temperature curing.

BY CARL BAUER
Research Chemist
Standard Varnish Works

THE present aim of the coating industry is the development of a one-coat finish, that can be applied at the highest possible solid content, and which can be cured within the shortest period of time. The resultant film should have all the desirable properties that are universally acknowledged as a prerequisite for a satisfactory industrial finish.

War developments within the last few years have brought us a considerable distance closer to this goal. The progress of our enormous synthetic resin and rubber industry has provided the paint chemist with new ideas and new tools for better and more economical finishes. This problem of a plastic coating has been approached in several different ways with varying success.

1—High Solvency Thinners

By the use of a highly active solvent combination the solid content of a coating can be increased considerably. The drawbacks of this method are the high solvent cost, connected with the restricted formulating possibility for a number of raw materials with limited solubility. Besides definitely restricting the non-volatile matter, this method also might result in application difficulties, such as sagging or case-hardening.

2—Emulsion Finishes

The recent success of emulsion coatings has shown that these materials have a definite place in the paint industry. There are many advantages to emulsions, such as lack of odor, minimum amount of penetration and excellent coverage. The factor of solvent cost is eliminated, but the percentage of solid matter is usually governed by the viscosity of the material. For industrial applications however, the use of emulsion finishes is restricted at the present time due to limited stability, caused by their high freezing point, poor wetting on certain surfaces, and lack of high gloss and extreme film toughness.

3—Hot Application

Another and more promising method of solution is the application of a finish at elevated temperatures. This can be done by either hot spraying, hot-melt dipping or flame spraying. The plastic industry has pioneered the use of many of these raw materials by utilizing all types of synthetic resins and rubbers in their molding

(Continued on page 40)

If it's a finishing problem

PUT IT UP TO MURPHY

Finishing Department of the Piper Aircraft Corporation —a Murphy customer of long standing

Murphy has formulated over 1700 finishes for war and essential civilian needs.

You'll save yourself time and expense by putting your finishing problems up to the Murphy service-salesman. For he represents an organization that has pioneered in the development of industrial finishes since 1865—*finishes that are individualized to meet the special needs of the user.*

There is hardly a war product you can mention on which Murphy finishes have not been used — from guns, tanks and ships to ration cans and airplanes. In fact, since Pearl Harbor, Murphy has produced over 1700 individualized finishes to meet the special requirements of a vast variety of products essential to our Armed Forces and the civilian population.

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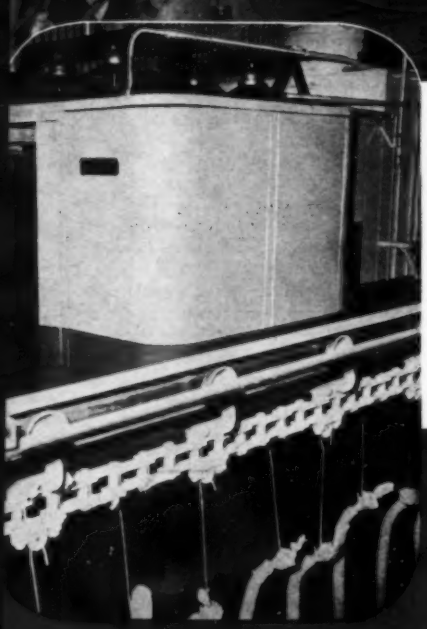

Above: Binks Dynaprecipitor Water wash spray booth in use by the Ford Motor Co.

Below: Infrared drying equipment used with the above booth at the Willow Run Plant.

At the Right: Binks gun in use in the Aircraft Building of the Ford Motor Company where 2000 H. P. Pratt & Whitney Engines are built.

ARMY NAVY

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With its known dedication to a great purpose . . . lending a strong helping hand to the winning of the war in the shortest possible time . . . you rightfully expect to find at the famous Willow Run Plant of the Ford Motor Co. no compromise with efficiency, no patience with waste or unnecessary expenditure in manufacturing operations.

It is not surprising then, when it comes to paint spraying operations, that the Binks name plate is to be seen on a wide variety of equipment in departments where paint is applied by the most modern, production-speeding methods.

Later can be told the intimate details of an interesting story . . . how Binks' long and successful experience aided this and many other great industries to apply "war paint" with astonishing efficiency. Sufficing for now, the accompanying photographs indicate in a small way how Ford is spraying with Binks equipment some detail parts of giant bombing planes.

With this same valuable "know-how" you, too, can expect Binks to help you to profit-building savings through paint spraying equipment tailored to fit your own particular requirements. Don't wait for the postwar rush. Now is the time to contact the Binks engineer located near you. Certainly, you may consult him without obligation.

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process. Owing to the availability of a large number of plastics, it is possible to obtain a tailor made finished product. It can be said that nearly all the plastics, which are marketed today, are also important starting materials in the coating industry.

Nitrocellulose, ethylcellulose, cellulose acetate, vinylite resins, methyl methacrylate and polystyrene represent a cross-section of synthetic materials of equal importance to the paint and the plastics industries. The introduction of these new chemicals also enabled the paint technician to blend various resins, oils, plasticizers and other modifiers in order to obtain the desired product. The enormous production of synthetic rubber was also responsible for a large number of new plasticizers and other chemicals, which soon found widespread use in the paint industry.

3a—Hot Spraying

Hot spraying of solvent coatings has been widely discussed and publicized in the last few years and has already found commercial industrial application. Its principle consists of lowering the viscosity of the finish by means of elevated temperatures and thus applying a higher-solid solution. This method requires powerful solvents with a high-boiling range and the installation of special equipment.

3b—Hot Melt Dip Coating

The hot-melt dip coating is the first step toward the application of a solvent-less finish but, due to the very nature of the raw materials used, this method is limited to thermoplastic resins. A number of industries experimented with hot-melt finishes and adopted them successfully for specialized applications, such as paper coatings, electrical insulation, peel coatings.

Some disadvantages of hot-melt coatings are dark color at elevated temperature, limited stability on extended heating, little viscosity control and, in many cases, lack of adhesion. The thermoplastic nature of these materials also caused tackiness and softening of the film at high temperatures during the summer months.

3c—Flame-Spraying

The process of flame-spraying is a recent development which is actually a modification of injection molding. Now the high molecular weight and the solvent resistance of most of our synthetic rubbers made it nearly impossible to obtain any appreciable solid content in a solution coating. At a very low concentration of solid material (5% to 10%) the viscosity of the resultant solution was too high for practical application, and the film deposited was too thin for any protective purpose.

A vast amount of work is being done at the present time to evaluate synthetic rubbers for the paint industry. The flame-spraying process uses plastics, such as Thiokol and Polyethylene, in powder form. The powdered material is sprayed through a hot flame and deposited in molten condition. Polythene coatings have to be applied in this manner, due to the lack of a solvent for this recently developed plastic. Flame-spraying application requires special equipment and has to be limited to certain raw materials with suitable properties.

4—Polymerization and Condensation

Polymerization has been defined by Staudinger as the union of like molecules, to form a product of

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Compounds and Equipment for Metal Finishing

the same composition. In other words, the polymerized material contains the same elements and in the same proportions, but has a higher molecular weight. In a condensation reaction, however, the polymerized material has no longer the same composition as its simple starting material (monomer). Generaly speaking, polymerization applies to thermoplastic materials, while thermosetting finishes fall into the condensation reaction category. Polymerization and condensation are usually accomplished by a combination of two methods: a) addition of a catalyst; b) application of heat. The amount and type of catalyst used and the reaction temperature will govern the speed of polymerization.

Closest Approach to a Real Plastic Finish

In this category we probably find the closest approach and the best solution of a plastic finish. This method would not require special equipment or complicated procedures. We are all familiar with thermosetting phenolic laminating finishes, which are used in resinous forms and cured by heat.

Research work has already shown that it is possible to use a phenolic resin at 100% solids in its second stage, while it is still fairly liquid, and cure it at a temperature of about 300° to 400°F., by adding an acidic catalyst before application. This resin could be applied by roller coating, spraying or dipping. The resultant film would have all the desirable properties such as toughness, chemical resistance and excellent adhesion.

Another method would be the use of a thermosetting resin in powder form, distributing it upon the surface to be coated and then fusing and curing the coating at a very high temperature.

Thermosetting Synthetics That Offer Possibilities

Alkyds, urea resins, melamine resins and other plastics belong to this class of thermosetting synthetics that could be applied similarly in a one-coat solvent-less operation. These heat convertible materials could be modified to a certain extent in order to overcome their inherent brittleness, without sacrificing their insolubility and infusibility.

As far as thermoplastic materials are concerned, the same possibility of polymerization after application as a solvent-less solid exists, but so far there is very little information on the subject.

One rather interesting method of applying high solid thermoplastic coatings has been worked out, by suspending extremely finely divided particles of resin in a low cost diluent. This non-active solvent exercises a swelling action on the resin surface and, after application, a tough film is obtained by fusing the resin particles together at a high temperature. This development can be even carried further by dispersing the resin particles in a non-volatile plasticizer and eliminating volitale thinners entirely.

There can be little doubt that eventually this goal of plastic paint application will be realized and form the beginning of a new conception of finishing methods. These changes will be brought about not only by the plastic and resin manufacturer but also by the paint technician. His work is largely responsible for establishing the production and application of finishing materials on a scientific and technical basis.

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You will find this new bulletin on Berry Brothers' Production Finishes very helpful in connection with your postwar planning. It describes more than 50 Berry Brothers' Production Finishes, giving properties and where used.

We have been, and still are, heavily engaged in the production of wartime industrial and aviation finishing materials, but many improved new finishes, developed through wartime research, will be available for your postwar use.

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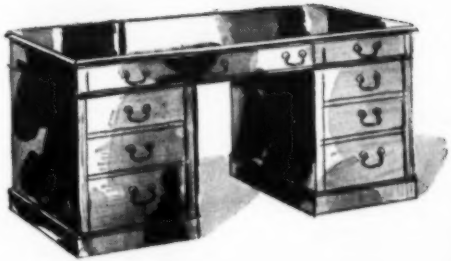

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No other finish can give you the same protection against oils, alkalies, acids, fingerprints, fats, stains, chafing—yet at the same time offer such unlimited color possibilities, beauty, and economy.

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Hercules makes no finished lacquers, but supplies the base nitrocellulose from which lacquers are made. For helpful information on your finishing problem, *call your lacquer supplier*. Cellulose Products Department, Hercules Powder Company, 928 Market Street, Wilmington 99, Delaware.

PROBLEMS WE MET AND SOLVED IN OUR CONVEYORIZED *Dip Painting System*

BY DALE W. MUSSELMAN

WHEN WE installed a dipping setup to coat 105-mm. shell cases, we naturally encountered some difficulties. Dipping coating on a production basis was an entirely new experience to us. Even though our plans were carefully engineered, and our automatic spray cleaner and dip tank performed better than we had hoped, we eventually ran into some serious problems.

Our Original Setup Caused Us Trouble

In our original plan the electrostatic detearing equipment was set up so that freshly coated shell cases would cross the first detearing grid 30-ft. after leaving the dip tank. Then we made the unpleasant discovery that while the electric grids would remove the clinging drops (tears) and heavy edge from the bottom of each case, these objectionable accumulations of paint would again reappear as heavy as before—after the shells passed the grids.

We determined to find the cause for this trouble. We had to. Investigation revealed the fact that in setting up the viscosity and flowing time of the paint to meet the thickness specifications, with the least amount of sags, we had not properly coordinated the flowing time of the paint with the electrostatic detearing equipment. Due to the length of the shell case and its completely vertical flowing position on the conveyor line, a lengthly period of flow was necessary to give a complete leveling out of the paint film. After some intensive experimenting we decided to move this equipment so that the shell cases would pass over the first electric grid approximately 70-ft. after they left the dip tank. At this point the flow of the paint was practically completed. Much better results were now obtained, and the shell cases entered the oven with clean edges.

But this did not completely solve our problem. Even though the lower edges of the shell cases were clean when they entered the oven, we still had some heavy drops hanging from the edges when they came from the oven. A

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In planning rearrangement of plant facilities for their future operations, many manufacturers are locating the Drying and Baking Ovens of their FINISHING SYSTEMS in the unused space ON THE ROOF of their plants. This practice was first advanced by Mahon engineers several years ago. It has many advantages. Primarily, it releases valuable plant space for other production purposes. In addition, it eliminates restrictions in oven design caused by columns, piping, ducts, etc., which are so frequently encountered inside the plant when large scale oven installations are to be installed. At your request, Mahon engineers will make a study of your product and production and will demonstrate the advantages of Mahon Roof Style Ovens, if practical for your purpose. A survey incurs no obligation.

THE R. C. MAHON COMPANY

DETROIT 11 *CHICAGO 4*

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thorough investigation, with the cooperation of the company manufacturing the detearing equipment, disclosed that our trouble lay in the gathering of a pocket of paint between the locking ring and the shell case itself.

Entrapped Paint Flowed Again in Oven Heat

The locking ring is a slotted metal band, spot welded around the swaged end of the case. It firmly holds the outer cap which contains a pressure plate with rubber gasket fitting tightly over the edge of the case, pressure being exerted by a handle bolt in the outer cap. This makes the shell case airtight, thus keeping the shell completely free from moisture. Even though the clinging drops of paint were completely removed before the shell cases entered the oven, the intense heat expanded the pocket of paint trapped between the locking ring and the case, and forced it out, thereby causing more drops to appear.

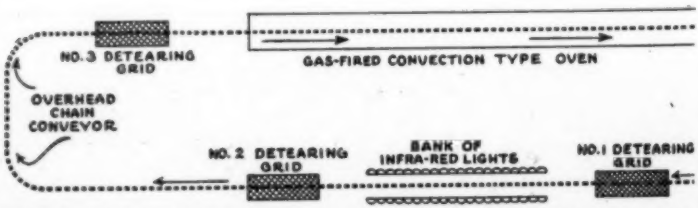
Our final remedy was to remove the center detearing grid and substitute in its place, a bank of infra-red lights on each side of the line. This bank consisted of 20 high-powered bulbs on each side of the line, and placed as closely as possible to the locking ring, concentrating intense heat at this point. The grid itself was placed close to the entrance of the oven. We also stepped up the oven heat from 325° to 350°F.

The result was this: The first detearing grid removed all excess drops, leaving a clean edge. The next step of passing between the heating lights had the same effect of driving out the pocket of paint, as had the oven. The second grid, and the third grid, close to the oven entrance, removed the drops and heavy edges which had been driven out by the infra-red lights; and the cases immediately entered the oven. The final result was entirely satisfactory.

This proved to us the fact that to receive maximum results from electrostatic detearing equipment, very close control must be kept of the paint to coordinate it with the equipment. The solvents used, the size of the article, the necessary flowing time for the leveling of the paint film, and the temperature —all must be taken into close consideration to obtain this coordination.

Hot Weather Sags Really Caused by . . . . Guess What

Another problem that confronted us—and for a time it was really baffling—occurred during the numerous intensely torrid days of



Plan view of part of our conveyor line where it extends from the dipping tank (not shown) to a gas-fired oven. Notice present position of our electro-static detearing grids, and the added bank of infra-red drying lamps.

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ATTITUDES on civilian production schedules change quickly, but one thing you can depend on, when "Signs of the Times" point to peace . . . Sprayit and Elsco products will satisfy your demands.

These products will come quickly too . . . simple reconversion problems . . . enlarged manufacturing capacities . . . mass production facilities . . . and a well trained organization will set in motion, complete cycles necessary for early delivery.

Never in the history of commerce has American business faced a condition like that to be encountered when full civilian demands are resumed. Orders will come from every corner . . . industry . . . stores . . . offices . . . homes . . . everywhere. It is the purpose of Sprayit and Elsco to release a steady flow of merchandise to these markets, and the finest products we have ever produced.

An outstanding new line of paint spraying equipment, air compressors, spray guns, insecticide sprayers, air tools, sanders, and allied finishing equipment will be made available to leading jobbers by Sprayit. And a fine line of electric motors, generators, hydraulic cylinders, valves, pumps and controls for aircraft, automotive and other industrial applications, will be produced for manufacturers in these fields by Elsco. Your correspondence is invited.

ARMY (E) NAVY

ELECTRIC SPRAYIT CO.

SHEBOYGAN, WISCONSIN

last summer. In the cooler hours of the morning we experienced no trouble. The paint would flow out nicely. But toward midday we would begin to get long stringy irregular sags, which extended about 20-in. from the top of the case down to the bottom. These sags appeared at approximately the same place on each case. This situation would continue until about 10:30 P. M. on the second shift. Then, as the temperature went down, the paint would begin to flow out nicely again. We were called to task by the Inspection Dept.

We made thickness tests and discovered that in the center of these sags, toward the bottom of the case, where the paint obviously should be heavier than at any other point, the film thickness was considerably under specifications. Faced with the possibilities of heavy rejections, we had to do something to clear up this situation in a hurry.

We Changed Our Thinning Solvents

Apparently the cause of the trouble was this: A too-rapid evaporation of the thinning solvents, due to the extreme temperature, was shortening the normal flow of the paint. We immediately began to make adjustments in the solvents to suit the temperature. We had been using straight VMP naphtha as a solvent. Selecting another solvent—Varnolene—with a much slower rate of evaporation, we then built up the paint to give a longer flowing period, regulating this to any changes in the temperature, and still maintained our thickness of film. We obtained much better results but they were still not entirely satisfactory.

Dip-coating a part or product involves something more than merely dunking it in a tank of paint and hanging it to drain and dry. We must also consider our paint viscosity, solvents, temperature, rate of flow, film thickness, drafts, drying, and many other important details.

One unsightly sag still obstinately appeared at the same spot on each shell case. In cooperation with a service man from the paint manufacturer, we made a determined and thorough investigation—and finally solved the problem. This was our solution: Our dip tank is almost entirely enclosed. It is open only where the conveyor line enters and emerges from the booth and tank, leaving only enough room for the cases to clear freely. After leaving the tank the cases appear in the open, at about 8-ft. above floor level. A large ventilating fan, which supplies fresh air to the dip room and also to the surrounding shop, is located quite some distance to the left of our dipping room, and on the roof level. The fan is entirely enclosed and the air it moves is distributed through pipes and ducts to the locations where fresh air is needed.

Current of Air Through Crack Caused Sag Trouble

We noticed that when we stopped the fan our sag would flow out as it should; but when the fan was started up again there was the sag. By a little further investigation, we discovered that the flow stoppage at the one particular spot on each shell case, started just as the cases came into the

(Continued on page 55)

Pat. Pend.

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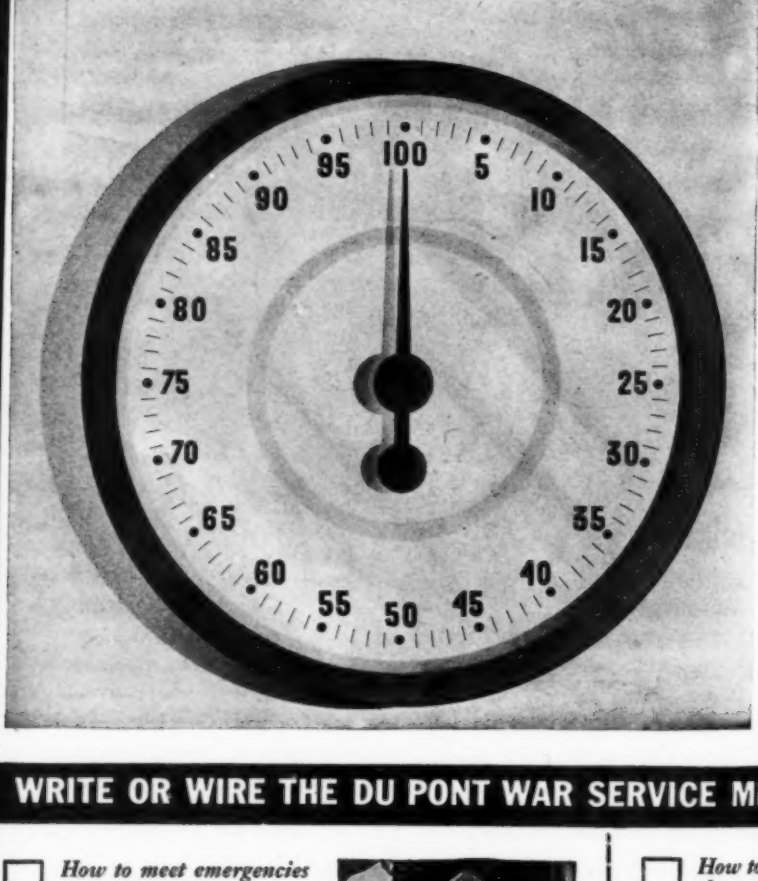

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☐ *How to meet emergencies and solve problems*

Check here for the help of Du Pont War Service Men—skilled "trouble shooters" to straighten out "kinks" in your finishing system *before* or *after* the trouble occurs. Their "know how" is at your disposal on any war contract finishing. Write about your trouble. Or wire in case of emergency.

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e DAL *means 100% in baking efficiency*

w device automatically tells when a finish is baked—another dication of Du Pont's thoroughness in testing product finishes.

Du Pont's Jobs is to check the uni- of its finishing materials by testing batch before shipment. Consider the of an organic finish formulated for time—high-temperature baking:

's imperative that this type of product be of e greatest possible uniformity in every tch. If the product is designed to bake for short time at high temperature (10 min- s @ 360°F., for example) any variation baking time, temperature, character d weight of metal, or finishing material y result in an over-baked or under- ked finish and adversely affect its quality.

t a baking type product it must first be rly baked—and to exactly the same de- s in actual production. In order to ain exact laboratory control, a Du Pont cal engineer has recently devised a new ment which operates automatically and es the exact degree of baking at vari- tervals. When the reading on the in- ent dial reaches 100, the finish is com- y and properly baked. Then Du Pont the finish for such essential properties or retention, moisture resistance, mar resistance, etc. This assures uniformity o each batch of finish.

Although Du Pont is using this new devic only in its laboratories, similar method can be employed right in your plant to pre determine baking time and to solve bakin problems. If you run into such a finishin problem, why not get in touch with a D Pont war service man and discuss it with him

If you are interested *in short-time—high-tem perature baking,* send for a reprint of Du Pont article on this subject as presente before the American Chemical Society, Di vision of Paints, Varnish and Plastics Chem istry, in New York this fall. This illustrate article describes the instrument for com puting baking time. Use the coupon below E. I. du Pont de Nemours & Co. (Inc.) Finishes Division, Wilmington 98, Del.

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1928-1944

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To those of you whom we have not had the pleasure of serving, we invite your inquiries for such excellent quality materials as—

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open, from the dip tank. Upon climbing a step ladder to reach the level of the emerging cases, we found ourselves in the path of a current of air, which was striking the cases at the very point where the sag was forming. Investigating the source of the current of air, we found a small crevice in a corner of the room, housing the fan. Through this crevice came the current of air directly from the fan; and it was striking each case as it emerged from the dip tank. The force of the air current, which was very warm during the warm hours of the day, caused the stoppage of the correct flow of paint at the spot where the air hit the cases. Repair of the crevice gave us immediate relief from the objectionable sag.

Observe All Details Closely in Conveyorized Dip Setup

Best results in a dipping operation can be obtained only by giving the strictest attention to every small detail that might have some adverse effect on the paint. Controlling the viscosity to meet changes in temperature and humidity, keeping the paint and the painted objects free from any direct currents of air, and maintaining a high standard of cleaning the products preparatory to painting—these are the chief requisites for a successful dipping operation.

Our paint viscosity was set up at a reading of 30 points on the Baume A scale, and 54 seconds on a No. 2 Ford viscosity cup, at a thermometer reading of 70° F. As the temperature rises we correspondingly decrease (slightly) the solids content or specific gravity of the paint, and maintain the necessary flowing time by the addition of a slower-evaporating solvent. A drop in temperature would bring just the opposite procedure; in other words, a slight increase of solids content and a correct proportion of the faster-evaporating solvent. A definite periodic system of keeping the dip tank and the detearing equipment cleaned is also a necessary part of our dipping procedure.

"Rubber Rancho Grande," the giant government synthetic rubber plant at Port Neches, Texas, operated by The B. F. Goodrich Co., produced 100,000,000-lbs. of man-made rubber up to November 5, 1944. The large copolymer plant began producing synthetic rubber in August, 1943. The output of "Rancho Grande," in slightly more than 14 months, is equivalent to the rubber yield of approximately 14,000,000 rubber trees during the same period of time.

P. P. G. Adopts New Insignia

The Pittsburgh Plate Glass Co. has adopted a new official insignia consisting of the letters PPG interlocked, in order to facilitate the ready recognition of its many and varied paint, glass, brush, chemical and plastic products. This insignia will appear on all labels or other means of product identification, advertisements, letterheads, packages, signs or wherever the company signature might be used throughout its entire organization.

DuPont Appoints Matt Denning Director of Sales

Appointment of Matt Denning as director of sales of the Finishes Division of E.I. du Pont de Nemours & Co., is announced. He succeeds the late W. Franklin Donohoe. Mr. Denning, since October 1, has been assistant director of sales, an office which will be temporarily discontinued.

Mr. Denning is 48 years old and a native of Philadelphia. He served as a Navy Pilot in France and Italy during the first World War.

Painting Plastics

BY AUGUST LOUIS MEDEL

An example of how a smooth hard plastic area was masked and portions of it painted to match an all-aluminum frame. Adhesion of paint was perfect.

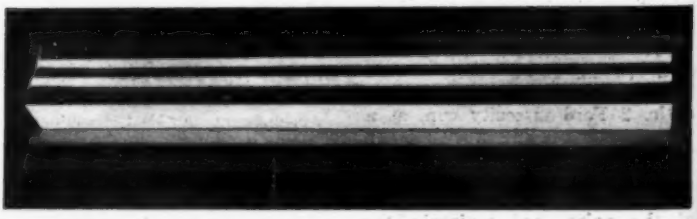
SOLID PLASTIC must be considered as an individual material. It is not a substitute for metal, glass or wood. It has individual characteristics. The extensive study and research work that have been directed to the development of plastics during the past decade, and the wonderful results that have been accomplished, entitle solid plastics to a distinct classification.

As with many woods and metals, the natural finish on sheet, tubular and moulded plastics is usually the most attractive. However, it is often desirable to enhance the natural finish by occasional changes, just as a beautiful wall is enriched by the addition of pictures suitably hung to break up the large expanse. In some cases the question of price makes it advisable to use a comparatively low cost plastic which may have a relatively poor natural finish.

When planning on a possible use of a utility or decorative coating on the surface of a plastic sheet or moulded item, these questions naturally come up: "Can plastic surfaces be given a durable and attractive coating economically? Will the ordinary commercial spray paints adhere satisfactorily? Can a suitable solvent be used to thin the coating, for example, acetone, ethylene dichloride, or something else that has similar qualities? Can plastic be plated with different metals, and will the plating adhere? Can a plastic surface be dyed with a depth of color, and not destroy the natural finish?"

Countless other questions will arise, but these are the main issues. The last two have been successfully solved. Plastic can be plated satisfactorily in any of the well known metals—copper, brass, nickel, chromium, silver.

A dye suitable for plastics has been developed; it is mixed with



Fluorescent lighting fixture (for railroad passenger cars) made of an aluminum frame and two panels of transparent plastic (such as methacrylate). The long narrow concave panel (upper panel in picture) is taped and three strips of it are painted with aluminum lacquer to match the aluminum frame. Photograph, courtesy of the Safety Car Heating & Lighting Co., Inc., New York, N. Y.

VITA-VAR RECEIVES ARMY-NAVY "E" HIGHEST PRODUCTION AWARD!

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PAINT ENGINEERS SINCE 1888

NEWARK, NEW JERSEY

water. The plastic articles are immersed in a hot solution of this dye for a period of two minutes. The dye penetrates to a considerable depth, yet the plastic surface is undisturbed—that is, it is not harmed.

Apparently therefore, the still unanswered question in connection with finishing plastics is in reference to the use of a satisfactory spray lacquer. This lacquer must have good adhesion therefore it, or rather its solvents, must be more or less of a solvent for the particular plastic on which it is used; yet it must not attack the plastic to such an extent that the smooth plastic surface will be harmed or distorted in any way.

The variety of plastics now available have different characteristics and it is more than probable that a lacquer which will work perfectly on one kind of plastic will not be entirely satisfactory on another. This information will have to be determined in the laboratories, or by trial and error in the user's factory.

A Masking-Painting Problem on Smooth Hard Plastic

The photograph at the beginning of this article shows one side of a wall trough fluorescent light used by one of the railroads in this country. The framework of this fixture is aluminum in a "brushed" aluminum finish. Two panels of translucent plastic are used in this fixture. The lower panel is flat, but the upper one—the front piece—is curved to a concave shape. The two light bars you see extending lengthwise of the upper panel are raised about ¼-in. and are about ½-in. wide. The whole panel is about 5-in. wide.

The two raised bars, which show white in the picture, are taped with masking tape on both sides. Then the panel is sprayed with aluminum paste mixed with a good grade of clear lacquer thinned with acetone. The inside (the convex side) is given three to four spray coats of aluminum paint. Then the sheet of plastic is held up to a light to make sure that the painted areas are opaque. The outside (the concave side) is also given one good coat of the same finish. When the aluminum paint is dry the masking tape is removed. As a result, the aluminum painted part of the sheet of plastic looks exactly like the solid aluminum of the fixture frame.

To test the adhesion of the sprayed aluminum, we used a sharp knife. The finish (aluminum paint coating) was shaved off right down to the plastic, some of which was shaved off with the aluminum paint. At no time did the film of aluminum paint crack, chip or peel, which proves that the mixture has good adhesion.

Mixing Equipment Announces New Distributors

Mixing Equipment Co., Inc., of Rochester, N. Y., manufacturer of "Lightnin" portable mixers and heavy-duty "Mixco" agitators, announces changes in its sales organization.

The Emerson Scheuring Tank & Mfg. Co. of Indianapolis, Ind., manufacturers of stainless steel and special alloy vessels, will act as representative for Central Indiana.

The White Industrial Sales & Equipment Co. of Cincinnati, Ohio (E. V. White, President) will represent the company for Southern Ohio, Northern Kentucky and the western part of West Virginia, including Charleston. The portion of the West Virginia territory was formerly handled by Moorhead Co., Pittsburgh, Penna. and the New York City office of the Mixing Equipment Co.

Part of this territory was previously handled for many years by the E. W. Buschman Company of Cincinnati, Ohio. This arrangement is now terminated by mutual consent.

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Setting up Correct Spraying Pressures

BY PETER P. WOOD

Photograph, courtesy of Binks Mfg. Co.

THE following procedure is the only proper way to set up spraying pressures, both atomizing and fluid—giving consideration to all the known factors such as economy, production and quality, viscosity, type of paint, size and shape of article to be coated, etc.

Assuming that pressure-feed equipment is being used, and a modern spray gun, follow these several steps in order.

1) Place object in booth, or hang it on moving conveyor (the conveyor being set to travel at regular production speed).

2) Set atomizing air pressure at regulator between 45 and 60-lbs.

3) Give spray gun to an operator, with fluid adjustment wide open.

4) As operator starts to spray object, increase fluid pressure at pressure tank, paying no attention to pressure on gauge, until operator informs you he has sufficient paint for the speed required to do the work.

5) After being informed by the operator that he has sufficient paint, note the pressure on the pressure tank gauge.

6) Increase the pressure until the operator complains that he has too much paint to do his work properly.

7) Note at what pressure the operator said he had too much material.

8) Reset the fluid pressure at a point half way between where the operator said he had enough and where he said he had too much.

9) Returning to the atomizing pressure regulator, reset this at the lowest possible pressure to obtain the finish desired. First lower the pressure until the materials sprayed on the work are out of control. This will be indicated by runs, sags or beading. Next, in-

Request from Production

Note: To Planning Department
Please ask the Enterprise Industrial Representative to come in for consultation.
Enterprise is now making a non-alkyd synthetic enamel for high or low bake schedule that is the answer to our problem.
The finish is as hard as glass and has extreme outside durability.
As you know, Enterprise makes Enterinkle, the non-alkyd wrinkle finish we are now using in our war production.
Geo. Smith
Production Manager

Your Inquiry Will Be Given Prompt Attention

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Industrial Division

CHICAGO 7 **ILLINOIS**

crease from this lowest pressure until you have complete control of the material on the surface being sprayed.

10) Stop at the lowest pressure you are able to work with and note the gauge pressure.

11) Demand that these pressures remain for all time unless changed by the foreman.

12) Insist that the spray gun fluid-adjustment screw remain at the open position. Objects being sprayed are of various sizes and shapes and this has a great deal to do with how wet you spray. An object that has many ribs, projections or depressions will have places that are recoated several times during the spraying of one coat. This object will require more atomizing air pressure than some plain object to keep it free of runs.

Low atomizing pressures will save many gallons of material which otherwise would be lost in the exhaust air. Materials in the exhaust air collect in the booth, fan and stack; and these areas must be cleaned by an expensive maintenance crew. Sometimes the exhaust material escapes through the stack and is deposited on automobiles, neighboring homes and trees as far away as two blocks from the plant. If waterwash booth equipment is used, much less sludge will be collected and less compound will be necessary.

To all those interested in economy: Get your data facts together over a one-week period, using your regular methods. Then set the equipment according to the 12-point program outlined here, and keep the same records for the same length of time. I predict that the saving of paint alone, not to mention lower maintenance costs and cleaner paint shop, will save so many gallons of paint that you will be indebted to INDUSTRIAL FINISHING enough to purchase a subscription for every man in your paint department.

There will be a definite tendency for the better finishes of the future to be force-dried or baked. Where the size and shape of the object being coated is uniform, infra-red baking will be used to a considerable extent. Irregular-shaped items and non-uniform articles will probably be baked in convection-type ovens, many of which will be conveyorized. There will be a definite trend toward higher temperatures for shorter periods of time.

These postwar finishes will probably make use of synthetic resins, processed oils, and other manufactured raw materials to even a greater extent than before the war. The developments will probably be adaptable not only to metal items, but there is a real likelihood startling developments will also occur in the finishing of furniture and other wooden items.—P. M.

Binks Is Awarded Second Star for Its Army-Navy "E" Flag

The War Department has notified Binks Mfg. Co. that it has won a second white star for its Army-Navy "E" flag . . . . for meritorious services on the production front. This is the symbol of appreciation from our Armed Forces for the company's continued and determined effort and patriotism.

Nagle Made National Sales Manager

The Udylite Corp., Detroit, Mich., announces the appointment of L. V. ("Larry") Nagle as Vice-President in charge of national sales, for that company. Mr. Nagle has been active in the metal finishing field for over 17 years, having been Michigan Sales Manager for the Udylite Corp. for the last 13 years.

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PLASTICS

IT IS A magic word with important possibilities for manufacturers in almost every field. The beauty and attractiveness of such products as door pulls . . . hardware . . . face plates . . . toys . . . stands . . . clock cases . . . and many others, made of plastics can be greatly enhanced by coating with Mearlmaid Pearl Essence. Available in all colors and shades including

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Anti-Sweat Painting in Steel Ships

How we paint cold water pipes and other areas in fabricated steel ships to prevent heavy condensation of air moisture on those cold metal surfaces.

BY HENRY NOVAK

IN THE building and painting of fabricated steel ships for use in the war, we have experimented rather extensively with anti-sweat painting (application of a coating to prevent condensation of moisture in air on cold steel surfaces). We have tried out different methods and equipment until now we feel that we have obtained a full uniform anti-sweat finish that passes inspection for appearance and for the purpose for which it is intended.

Here are some of the areas on which this type of paint is applied: Steel that is directly exposed to chilling by conduction through metal from the action of wind or water; or where sweating would occur due to opposite extremes in temperature, such as bulkhead interiors where the exteriors are exposed to the weather and underwater portion of ship; under-deck-heads where the exterior is exposed to weather, snow, rain, heat and cold. This also includes cold water pipes on which condensation forms.

All of these areas are "sweat-painted" because condensation would harm or inconvenience some of the ship's personnel and probably damage some of the equipment and cargo.

Clean the Steel Surfaces; Then Apply Coat of Binder

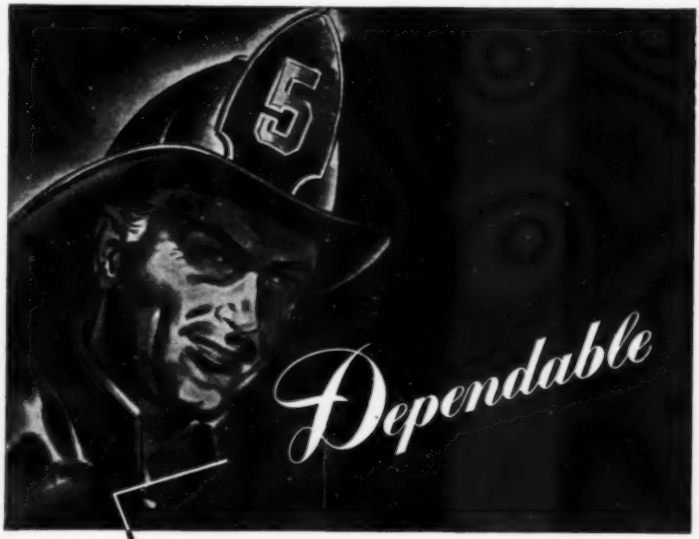
The first work to be done is to thoroughly clean the surface of the steel. We clean off all rust, loose mill scale, grease, oil and dirt. A pneumatic tool with a wire "cup brush" is used for this. Next we apply a uniform coat of primer. We use a zinc chromate primer, and allow the primer to dry thoroughly.

We brush on one coat of anti-sweat binder—a good heavy uniform coat, free from sags. We do not thin the material; we use it as it comes in the can. We do not try to cover too much surface at one time, but do a certain amount of area and then apply the ground cork or vermiculite granular material.

On ships, we do the area between the frames, from top to bottom. It is about 2½-ft. wide by 15-ft. long. In small shower rooms we apply the binder on all of the exposed steel and then apply the granular material.

The material applied over the binder is either ground cork or vermiculite.* The vermiculite must

*Vermiculite, according to the dictionary, is any of a number of micaceous minerals which are hydrous silicates derived generally from the alteration of some kind of mica;—so called because the scales open out when heated, sometimes producing long wormlike forms. It does not burn, glow, smoke or char.



IS THE WORD FOR

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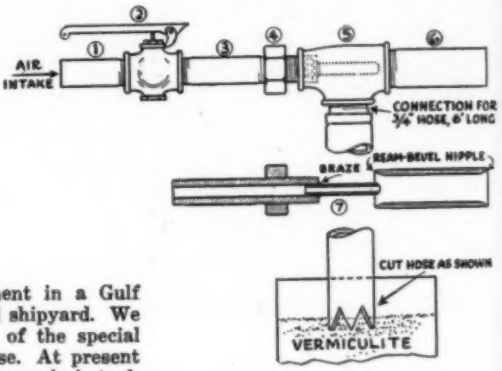
When the sirens blow, you know that somewhere an unfortunate property owner is counting on a squad of highly trained firefighters to rapidly bring a destructive blaze under control. In a similar sense, you can count on Arco production finishes to "put out the fires" in your finishing problems. Every shipment matches specifications exactly, fulfilling—or even surpassing—the required performance characteristics. Specify Arco and you specify dependability.

Paints for Industry THE ARCO CO.

CLEVELAND, OHIO • LOS ANGELES, CALIF.

not be too coarse for these reasons: First, there is a high rebound loss of the material; and second, it does not form as uniform or dense an anti-sweat coating as do the finer grades.

With this article I am including a drawing of a gun used to apply this aggregate. I saw the operation of this equipment in a Gulf Coast and an inland shipyard. We are making up two of the special guns for our own use. At present we are using a compressed-air tank with air regulator, 15-ft. of flexible hose, and a flared metal nozzle which is giving us satisfactory results.



Details of special gun designed and made especially to spray vermiculite. The No. 2 detail is a whistle valve.

Fill a paper bag, a sack or a 5-gallon container with the vermiculite. Hold end of hose at top level of the vermiculite and rake it around over the vermiculite. Hold the spray nozzle close to the wet binder. Use 8 to 10-lbs. of air pressure. Start from the bottom and work upward. Working from the top downward would result in poor adhesion, as the dust would fall downward on the tacky binder, causing a film of dust to form over the binder—and the vermiculite would not adhere to it. We have experienced this at our yard.

Some plants have applied this cork or vermiculite by throwing it on by hand. This is a very slow and costly operation, especially when you have large areas to cover.

Retrieve Waste Material; Apply Finish Coats

Clean up the vermiculite that has rebounded and fallen on the floor immediately. This can be used over again. If it isn't retrieved immediately it will become dusty when stepped on and will become mixed with other foreign materials. It can be picked up by vacuum with the same outfit, or a small portable commercial vacuum cleaner can be used.

After the tacky binder has been covered with vermiculite it should be allowed to dry for at least 24 hours. This allows the vermiculite to become thoroughly imbedded in the binder so it will not come loose when the final finish coating is sprayed on.

The first finish coat should be sprayed over the vermiculite in a uniformly full wet coat. If the first finish coat were to be brushed, too much of the vermiculite would come loose and fall off. The second finish coat can be either

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brushed or sprayed. By brushing, a better appearing and more uniform finish will result, due to getting the paint worked well into the recesses.

This finish can be applied to any surface where sweating and condensation are heavy. Its usefulness is not limited to ships.

A Commercial, Combination Anti-Sweat Paint

There also is a combination anti-sweat coating on the market, manufactured by several firms, wherein the cork is already mixed with the binder. By using this material you apply the binder and cork in one operation. Special spray equipment, manufactured by leading spray equipment firms, is used. A pressure tank with the material outlet at the bottom of the tank, and hose ¾ to 1-in. in diameter are used.

The tank has a "follower plate" that is put on top of the heavy material and air pressure forces the plate down on the material. A special gun is used with a large air cap and fluid tip opening. The same equipment is used as is made for applying sound deadeners and heavy emulsified asphalts.

This material is all right where all surfaces in a given area are to be coated, but like in our case, where only certain parts are anti-sweat painted, it would be rather difficult to keep the frames free from this coating unless those areas were carefully masked or shielded.

I have used some of this anti-sweat coating. It works fine and gives a nice-looking full uniform finish. One good feature is that it can be applied to a thickness of about ¼-in. to produce a combination heat and cold, and anti-sweat coating.

How to Operate Fire Extinguishers

THE SPEED with which an employee uses an extinguisher to attack an incipient fire often makes the difference between an incident and a disaster. Therefore fire protection authorities recommend that periodic fire extinguisher demonstrations be held to teach plant personnel the simple but important rules for operating extinguishers. If demonstrations are too difficult to arrange, this information can be conveyed by means of wall posters, articles in company papers or oral instructions by foremen.

Below are step-by-step directions for operating the different kinds of approved hand extinguishers:

Soda-acid and *Foam* extinguishers are usually hung on wall hangers or set on brackets or shelves. Take the hose between the thumb and index finger of the right hand and grasp the ring-top handle. Then, with the left hand, lift the extinguisher off the hook and lower it, keeping the extinguisher in an upright position. Carry the extinguisher to the fire by means of the ring top handle held in the right hand, still maintaining a hold on the hose nozzle.

To set the extinguisher in operation, grasp the bottom handle with the left hand and turn the extinguisher upside down. Release the ring top handle, but continue holding the hose in the right hand to direct the stream.

Gas cartridge and *loaded stream* extinguishers closely resemble soda-acid and foam types and are operated in much the same way. When these types are inverted, they must be bumped on the ground to rupture the carbon dioxide cartridge

(Continued on page 90)

"TAILOR-MADE" FINISHES
for your Post-War products

NOW is the time to "take the measurements" for those coats of varnish and other finishes that each of your post-war products will need! When finishes are "custom-built" by Reliance they fit better, wear better look better and are more economical.

Depend on Reliance for finishes that do specific jobs exceptionally well. Reliance has the laboratories, imagination, resourcefulness and experience — years of specializing in this field. May we suggest that you call on our technicians to analyze your needs. Reliance field service—is at your command.

Rely on Reliance

Compar Washers and Gaskets Immune to Oils and Solvents

The story of the synthetic resin that proved to out-perform rubber is the story of the compar washers, seals, gaskets, diaphragms and similar flexible moldings that are being turned out for a wide variety of industries by Resistoflex Corp., Belleville, N. J., developers of compar. Though the first moldings of this vinyl resin derivative were not compounded to take the place of rubber, it has now been demonstrated that compar out-performs rubber in many applications where its use has now become standard.

Molded compar is capable of any number of variations which give the exact degree of flexibility, elasticity and abrasion resistance required for each particular application and is widly used in industry. These compar parts have a service life from 5 to 250 times that of rubber and exhibit the same outstanding characteristics of inertness to organic solvents, abrasion and flexing as do Resistoflex oil-proof and solvent-proof hose assemblies which have as their core an extruded tube of compar.

Protective Hand Lotions

Mine Safety Appliances Co. announces the addition of Fend-U, Fend-F, and Fend-PC to its Fend group of protective creams and lotions.

Fend-U is a lotion which forms a semi-water-repelling barrier on the worker's skin against all types of cutting oils and cooling compounds, kerosene, carbon tetrachloride, tetrachlorethylene, benzol, other solvents and degreasers, mild acid and mild alkaline solutions, alcohols, and acetates.

Fend-F is a water-soluble heavy-duty lotion which helps guard against dermatosis from aluminum, magnesium and zinc dusts; it forms an effective barrier against Fiberglas, sharp particles, fruit and vegetable fuzz, chlorinated solvents.

Fend-PC helps reduce nervous perspiration where this is the cause of skin irritation, thus helping to prevent rusting of polished metal surfaces through contact with skin moisture. It is a water-soluble cream which protects the skin against dust-borne irritants, grime, grease, dirt.

Fend creams and lotions form a protective physical barrier on the skin against scores of irritants encountered in industry. They are simply rubbed onto the exposed skin, before work, and are easily removed with mild soap and warm water at work's end. Descriptive literature, including a detailed application chart, is available on request from Mine Safety Appliances Co., Braddock and Meade Sts., Pittsburgh 8, Penna.

Water-Wash Compounds

In calling attention to its three new types of compound for water-wash spray booths, Binks Mfg. Co., 3114 Carroll Ave., Chicago 12, Ill., issues the following warning and recommendations:

A large number of water-wash compounds on the market burn or destroy the sludge or overspray and carry the abrasive paint particles through the pump, considerably wearing the moving parts of the pump. Before using compounds, squeeze out water from a handful of sludge. If sludge resembles putty in consistency and is not sticky, you do not need water-wash

WHAT'S NEW AT WATSON-STANDARD?

"PHEN-COTE"

P-9202 GOLD CLOSURE LACQUER

one of the New PHEN-COTE *Series*

A thermo-setting, oil-free phenolic plastic resin finish, especially adapted to deep drawing and severe fabrication conditions where a highly resistant coating is indicated.

As an exterior protective coating for Crowns, Closures, Screw Caps, Cans and other products requiring coating prior to fabrication, P-9202 "PHEN-COTE" offers outstanding corrosion resistance.

As an interior lining this product displays resistance to Acids, Alkalies, Oils, Greases, Alcohol, Solvents and many chemicals.

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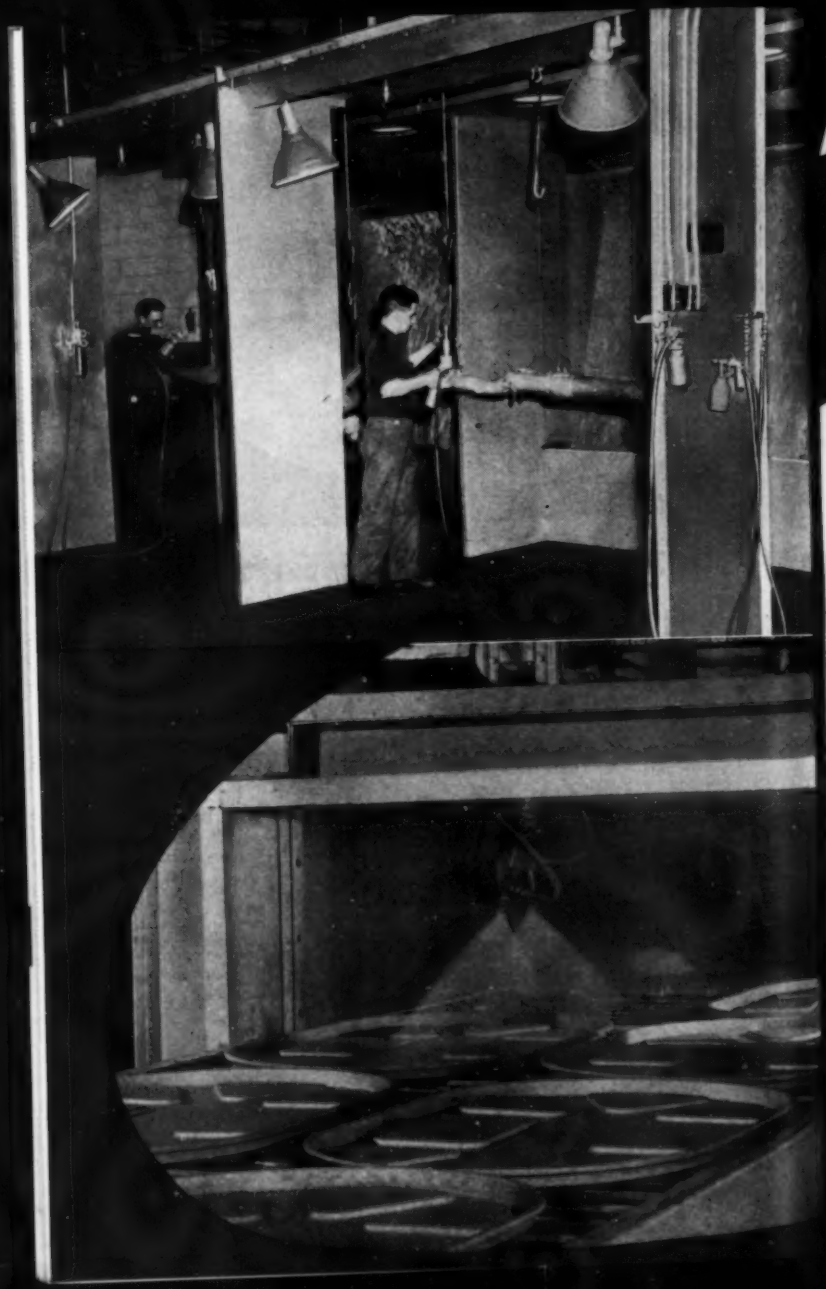


Streamlining FINISHING LINES

to be ready for peace

• Streamlining finishing lines for war production has been DeVilbiss' war job for three years. It helped industries reach peak war production faster, and will help them attain full, efficient peacetime production sooner.

Here are two examples of streamlining for war that set the pattern for better peacetime finishing. The modern DeVilbiss Water Wash System at The Cleveland Pneumatic Tool Company (left, above) is expertly designed for fast, straightaway handling and finishing of airplane struts. Another type of DeVilbiss streamlined finishing (left, below) is seen at a Boeing Aircraft plant where parts are finished as fast as they move through a DeVilbiss horizontal-transverse-action machine, armed with two automatic spray guns.

Compare these latest DeVilbiss Spray Systems with your own finishing methods—you may find some worthwhile advantages either to speed your present production or conversion plans.

THE DEVILBISS COMPANY · TOLEDO 1, OHIO
Canadian Plant: WINDSOR, ONTARIO

DE VILBISS
Spray Systems

compound. If sludge sticks to your hand, compound is needed; or if you are now using compound and sludge powders, a change in your compound is advisable.

1) Binks No. 5RS Cleaning Compound is recommended where no operating compound is needed and only a regular cleaning of the booth is necessary. When the 5RS compound is used, it is advisable to remove the sludge or overspray from the top of the water every four hours. At the end of the week's production, drain water from tank and half fill with clean water, to which a very small amount of 5RS Cleaning Compound should be added.

2) Binks No. 7R Compound is the commonly known type of operating compound and is suitable for all average type paints.

3) Binks Special Compound. If you are using an unusually sticky paint, wrinkle finish, or a new product that does not operate successfully either with plain water or with Binks 7R Compound, it may be necessary to formulate a special compound. In this case, you are requested to forward a one-quart sample of paint and a one-quart sample of solvent used to thin that paint to the Binks Mfg. Co. for trial test. The company will then recommend a special compound best suited for your type of material.

However, it must be remembered that if you change paint or solvent, changes may be necessary in the formula of your compound.

New Metal Cleaner

Pennsalt Cleaner EC-10 is a new organic-type cleaner produced by the Pennsylvania Salt Mfg. Co., 1000 Widener Bldg., Philadelphia 7, Penna. This metal cleaner employs a new principle, as a result of which it removes soil which alkaline cleaners hardly touch in the short time usually allotted for ceaning. It is especially adapted for the quick removal of drawing compounds or cutting oils in a single operation. The company has just issued a folder explaining the use of Pennsalt Cleaner EC-10 in both the dip-cleaning and spray-washing methods of cleaning. It shows pictures of interesting tests demonstrating the stability of the product in emulsion and its quick effectiveness in dip cleaning.

Dyes to Color Plastics

The Krieger Color & Chemical Co., 6531 Santa Monica Blvd., Los Angeles 38, Calif., announces that it has developed both hot-water and chemical dipping dyes for coloring various clear and white plastics such as those made of cellulose acetate (Lucite, Plexiglass, Tenite), vinylite and polystyrene.

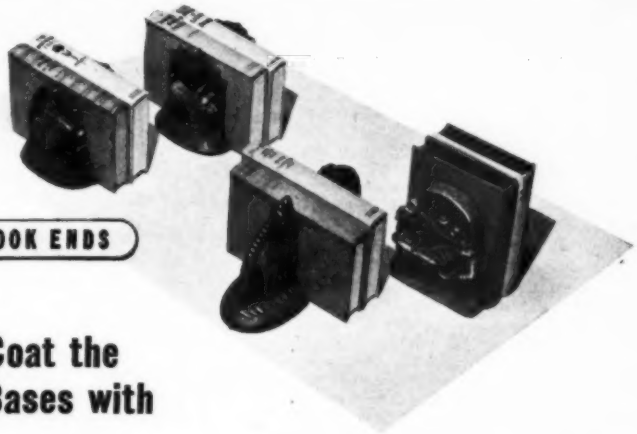
Dip Cleaning Machine

Dip cleaning in still tanks is generally practiced where production requirements are moderate. However, by adding strong mechanical agitation to the soaking, the time of cleaning may be reduced by more than half.

For that reason, a new portable dipping and agitating cleaning machine (Type TA) has been developed by the Optimus Equipment Co., Matawan, N. J. This machine is also recommended for other operations, including paint stripping, rust-proofing and other chemical treatments.

Essentially the machine is a strongly built tank (with insulation optional) with a cleaning door, drain cock, thermometer, inlet cock and dirt basket. The work is agitated vertically by a mechanism which moves it up and down, in and out of the cleaning solution. This results in a "brushing" action, during which the cleaning liquid hits the surface of the work as often as 30 times per minute. The cost of this agitation is low, less than 2c per hour for a 600-lb. load.

A removable frame supports the basket or the parts to be dipped in the solution and is attached to a sturdy shaft resting on two large flanged bearings. The part of the



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Coat the Bases with

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Every home-owner will appreciate your thoughtfulness in coating the bases of bookends with Cellusuede Flock. In addition to the scratch-proof protection it affords tables, desks, bookcases, etc., Cellusuede will enrich the appearance and value of your product immensely . . . at little cost. Its soft suede or velvet texture is luxurious to the eye, appealing to the touch. Easy to apply . . . very little equipment required.

Standard colors are available in both Cellusuede Cotton and Rayon Flock. Special colors matched to order.

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CP *Cellusuede Products, Inc.*
ROCKFORD, ILLINOIS

frame outside of the tank supports the motor and speed reducer which act as a counterweight to the work, thus balancing the load. This whole assembly — motor, reducer, bearings and frame—is removable as a unit.

A similar machine, specially designed for heavy loads and difficult cleaning jobs, is provided with two tanks and one agitation motor. The tanks are separated to avoid thermal exchange if the temperatures used are not equal.

Any cleaning agent may be used. Parts can be either sprayed, dipped, or both, since the machine is equipped with pump, hose and nozzle for special jobs, and can be handled in baskets, racks or individually. Overhead track and thermostat control are optional. The machine is available in many sizes.

Heat Circulator Fan

To promote circulation of air and thereby more nearly equalize the temperature in heated rooms during cold weather, it is suggested that suitable circulating fans be placed at the ceiling. The Reco heat-circulating electric fan blows the air a short distance upwards and then forces it to move outward along the ceiling to the walls and down toward the lower-temperature floor area. It is a product of Reynolds Electric Co., 2650 W. Congress St., Chicago 12, Ill.

Tumble-Blasting Cabinet

For blast cleaning small parts there has been developed a cabinet in which a tilted wire-mesh drum rotates. The wire-mesh drum is partly filled with small parts to be cleaned, a stationary sandblast nozzle is directed so it points down into the open end of the drum, the cabinet cover is closed, and operations begin. As the tilted drum is rotated to tumble the loose parts, the parts are sprayed with abrasive from the sandblast nozzle. This new outfit is a product of Leiman Bros., Inc., Christie St., Newark 5, N. J.

Hilo Varnish Corp. Receives Army-Navy "E" Award

On November 28, in the midst of patriotic ceremonies at the plant in Brooklyn, N. Y., the men and women of the Hilo Varnish Corp. received the Army-Navy Production Award for high achievement in the production of war materials.

George A. Martin Dies

George A. Martin, paint and chemical pioneer, well-known mid-west industrialist, and Board Chairman of The Sherwin-Williams Co., died in Cleveland, Ohio, Oct. 31. He would have been 80 years old on Nov. 7th.

A leader in the paint and color industries for the past 50 years, after he left school at 12 to work in the Chicago stock yards, Martin was perhaps best known for his success in

George A. Martin, Board Chairman of Sherwin-Williams Co. and official in several other concerns, died in Cleveland, O., October 31, 1944.

putting paint into ready-mixed packages to make it easily usable by the layman. After World War I when the blockade of German dyes and colors left the paint industry stranded, Martin crusaded to make the U. S. paint and chemical industry independent of foreign sources of colors and dyestuffs, to the extent that the companies which he headed owned their own pigment mines and smelters, oil mills and color works, and tin can plants.

Born in Montello, Wisc., and reared in Chicago, Martin has often been called a typical self-made industrialist. He rose through the ranks of The Sherwin-Williams Co. and until his death was active president of Acme White Lead & Color Works, John Lucas Co., Ozark Smelting and Mining Co. and the Sherwin-Williams Companies of Canada, Cuba and Argentina, as well as vice president of Lowe Brothers and Martin-Senour. He was director of Goodyear Tire & Rubber Co., Wilson & Co., Erie Railroad, The Cleveland Baseball Club, Metropolitan Opera Association.

Eliminating "GUESS WORK"

Now, more than ever before, is there need for careful consideration of types and qualities of finishes for postwar application. Walker Laboratories have been working on these items for some time, and offer a wide variety of coatings from which all "guess work" has been eliminated.

Your Product-Finishes' Problems or Requirements

REGARDLESS of the product-finishes' problem which may be bothering your organization, or what your special requirements consist of, most likely we can serve you satisfactorily.

Many Walker items of acknowledged merit and achievement, such as primers, surfacers, lacquers, synthetics and wrinkles, are serving industry for application to metal, wood, plastic, etc. The Walker line includes specification finishes also; and our laboratories afford every facility for the formulation of finishes for special purposes.

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Elizabeth, New Jersey

MODERN PRODUCTION FINISHES

Questions and Answers

Water-Wash Compound Will Work if . . .

Referring to the Questions and Answers on water-wash compound, as published in November issue of this magazine (beginning on page 88), it looks like this customer has a soft water condition. When you have water that is softer than average, you may have as much trouble as with very hard water. With very soft water, saponification starts with the slightest addition of compound. The water gets "wild," and foams over everything.

I know of one concern that has tried to cover all phases of compounds to act upon paint in water-wash booths. This company has a compound for extra soft water and medium soft water, and it will still act upon the paint particles.

To show how this works, I know of a manufacturing concern that had a deep well from which they pumped extra soft water. Their water-wash booth gave them a lot of trouble. Several months went by, with trouble and dissatisfaction, until a suggestion was made to install a pump and water line from a creek passing by the plant. The water in the creek was average hard water. The pump and water line were installed at little cost and the creek water was used in the spray booth. All of the trouble cleared up at once, using the normal grades of water-wash booth compound.

While I am many miles from the scene of action and trouble, I feel this is their difficulty. Note: If a water softener is used, pipe around it. Average water-wash compound will work good on average 18 to 35 grain hard water.—PETER WOOD.

Non-Rub Stain-Filler; Non-Sanding Sealer

We are interested in a stain and filler for a first coat on chairs—one that can be dipped or sprayed and will not have to be rubbed.

We are also interested in a sealer that will seal the wood without raising the grain and which would not need to be sanded between coats.—B. B.

To the best of my knowledge there is no combination stain and filler that can be dipped or sprayed and not require wiping. On open-pored woods the very nature of the filling operation requires that the filler be "padded" in and the excess wiped off the surface, so as to pack it into the pores and fill them level with the surrounding area.

Admittedly, filler padding and wiping is a laborious, dirty job. For that reason the filling operation is often slighted, especially in these days of manpower shortages. It would certainly be desirable to eliminate it if possible.

Unless the color is to be extremely dark, a combination stain and filler can be obtained which

Protective . . .

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WRINK-ALL has all the characteristics of old type wrinkle in appearance, uniformity, application, baking schedules, etc. Works well under severe conditions in foul ovens. It is available in all shades and colors, and in unlimited quantities for immediate delivery.

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FOR ALL SURFACES

United Lacquer Mfg. Corp

General Offices, Laboratory, Factory: LINDEN, N. J.

NEW ENGLAND MFG. DIVISION, EVERETT, MASS.

BACK THE ATTACK! BUY WAR BONDS!

stains and fills the wood in one operation. This filler is reduced with VMP naphtha or mineral spirits according to the recommendation of the supplier. It is applied by dipping or spraying. After a few minutes it is wiped off across the grain and cleaned up just like a regular filler.

Regular fillers or filler-stains are necessary for a smooth surface on such woods as oak, ash, walnut, and mahogany. Where the wood has very small pores the filler is not necessary.

If the wood has very small pores, or even if the wood has large pores and the filler wiping must be eliminated, I would suggest that a pigment stain be tried. This type of stain is applied by dipping or spraying. After a few minutes for draining, the surface is wiped with a rag dampened with the stain. This wiping and cleaning up are not nearly as laborious as with filler, and the pigments in the stain do have some filling action, even on wood with large pores.

Non-Sanding Sealer

The inquiry about a sealer that will seal the wood without raising the grain illustrates a common misconception. Lacquer sealers, varnish sealers, and even shellac do not really raise the grain in the sense that a water stain does. Water swells the wood and produces a rough surface. The materials named above do not swell the wood at all. They form a continuous film on the surface which prevents penetration by and absorption of the top coats. In so doing, they stiffen the wood fibers which have been frayed by the sanding operations, so that the surface feels rough in places and must be sanded smooth. They don't actually raise the grain. As a matter of fact, any coating material will have the same effect. A coat of clear varnish or lacquer or enamel, applied to the raw wood, has precisely the same effect.

Therefore the matter of elimination of sanding of the sealer does not depend upon the composition of the sealer at all. It depends first of all upon the condition of the surface when the sealing operation begins. If the wood has been sanded smooth and polished with fine sandpaper; if all routings and carvings have been smoothed and cleaned up; if a non-grain-raising or pigment stain has been used; if the filling job has been well done — then there will be little need for sanding the sealer. After all, the sealer is sanded to remove particles of dirt and nibs and to produce a smooth surface rather than to promote adhesion.

The second factor in arriving at a decision as to whether or not to sand the sealer is the matter of cleanliness and how much dirt can be tolerated. Sanding of the sealer cuts off nibs and most dirt particles. If there are only a few of these, then the sanding can be omitted.

Incidentally, for some years *I have been an advocate of having clean work so that a sealer free of sanding agents can be applied. Little or no sanding is necessary. The result is that the final coat has greatly increased toughness due to elimination of the sanding agent. In some cases an improvement in gloss and body has also been observed, because sanding agents detract from these qualities as well as from toughness.*—ROLLIN H. WAMPLER.

SPEED UP DELIVERIES

with

HOT LACQUER

The Hot Lacquer Process, developed by Commercial Solvents research, saves finishing time and cuts the cost of labor, equipment, and materials. That is because lacquer has a higher solids content when sprayed hot . . . requires only half as many coats . . . uses less volatiles. Ask your supplier about adapting the Hot Lacquer Process to your production.

CSC makes no lacquers or thinners but supplies solvents and plasticizers to manufacturers of protective coatings.

CSC

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17 East 42nd Street, New York 17, N. Y.

Finish for Bows and Arrows

We have encountered some trouble in finishing bows and arrows. These items are not stained. Usually we give them a coat of sanding sealer followed by a coat of clear lacquer. The arrows are dip-coated and the bows are sprayed. We get a good looking finish but in time, with the severe bending of the bow, cross check marks will show up. We have used a special flexible lacquer, with the same results.

A shellac finish will not check but it is too soft. Spar varnish, while not as soft as shellac, is still too soft, and to use it involves a long process. However it is waterproof.

We will be grateful if you can suggest a suitable clear waterproof finish.—X.

The obvious and most satisfactory solution to this problem is to use a penetrating finish. Take the spar varnish and reduce it with an equal portion by volume of mineral spirits, VMP naphtha, or turpentine. Dip the bow in it and allow to soak five minutes. Remove and drain. Then wipe dry with rags. Repeat in six hours. Two or three applications will seal and waterproof the wood. Then finish by steel-wooling and waxing.

If dipping facilities are not available, the penetrating finish may be swabbed on the bow with a brush, taking care to keep all surfaces wet for at least five minutes before wiping.

The finish built up by this method lies in the first 1/16-in. or so of wood. Little or none stays on the surface. The result is that the wood strengthens the film, and no checking or cracking will ever occur. I do not think a penetrating finish will adversely affect the strength or resilience of the bow.

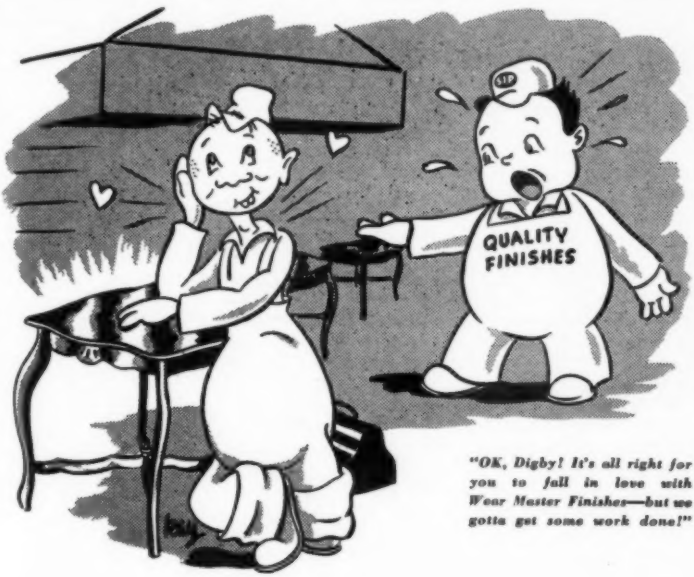
If a surface film is desired, however, I would suggest one of the vinylite or acryloid finishes. These may not be obtainable at present. Some of these products have remarkable adhesion, combined with hardness and elasticity. I feel sure that a product of this nature will be waterproof and will produce a nice appearance without cracking under the stressing of the bow.

Any surface film on a bow should be as thin as possible, consistent with satisfactory appearance and protection. A thick film of practically any protective coating will crack with age, especially under severe stressing.—R. H. WAMPLER.

Wood Toy Finishing

ON THE WOODEN TOYS which were made to replace metal toys for the holidays of 1943, the finishes as well as the construction left much to be desired. For this 1944 holiday season, some wooden toys already on the market show a slight improvement, yet none are equal to those produced before the war. The post-war hopes of wooden toy manufacturers depends on the stock of lumber available to them, and the kiln-drying of this lumber, so that uniform finishing can be obtained.

I have observed many wooden toys, especially those for boys, such as guns, machine guns, tanks and other "war types." I learned that many of these were made by individuals at their home workshops. They were painted by hand, with a black brushing lacquer. Some were touched up in spots



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S-I-P production-tested Non-Priority Enamels, Lacquers and Sealers are winning high praise from users! Try them!

EVANSVILLE 4, INDIANA

with brighter colors. I recall that pre-war wooden toys were made up durable and attractive in design, and they were painted in bright lustrous colors.

Also, I have noted that the wooden toys now being made are dip-coated and then "whirled" or "spun" dry to eliminate drips. In most cases the lacquer being used, or rather the "modified lacquer," gives a dull finish. It lacks that desirable gloss which was characteristic of the quick-drying enamels formerly used.

No primer or sealer seems to be used on wood toys at present—and, with the wood used being soft and of uneven grain and not thoroughly dry, we can't say much that is complimentary, for the present, on wood toys or about equipment for children and infants.

About a year ago wooden bed springs were manufactured for a short time, and while they served a temporary purpose yet, for an investment and comfortable sleep, they were not right—today metal springs are again being made.

The interesting application I am observing at present is the way certain lacquers adapt themselves to dipping of various items. The flow, etc., is controlled by use of the proper thinners; also, because of these fast-drying qualities no heat-drying is necessary.

Dull finishes, for small as well as larger items, seem to be accepted by the public in general, and high gloss or luster finishes may not be in such great demand after war. On the other hand they may be very much in demand. I feel sure that after the war, everyone of us will want bright vivid colors, to get away from the war-product colors, such as olive drab, zinc chromate, dark red primer, blacks and grays.

Finishes today are influenced greatly by the surfaces on which they are applied, just as in the past. Before the war, unsatisfactory surface conditions could be and would be corrected. Today grades of steel and wood are being used that a few years ago would have been rejected; or their surface conditions would have been corrected before any finish was applied. Metal cleaning also is suffering more than ever, due to the formulas of cleaning compounds being changed, and because of the shortage of certain materials.

Wood sealers, stains and other coatings are still influenced by availability of raw materials, and while we all want to be ready for postwar production—and can appreciate with the manufacturer his problem—yet we all face the fact that until this war is over we must all do the best we can with the materials that are now available.—A. W. TRITSCH.

Spraying Hot Lacquer

DOPE, the protective lacquer-type finish applied to airplane fabric, is used more today than ever before, not only on gliders but to attach fabrics to plywood plane sections on transports and combat planes. The coating of "dope" strengthens and stiffens the fabric to such an extent that it comes amazingly close to duplicating the strength of some light metals. However, until the development of a "hot" dope spraying system, finishing a wing or stabilizer surface took as many as 16 costly, laborious operations, many of them manual. With the development of "hot" dope, the number of operations has been reduced to seven and more

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that make the most of available raw materials to give you greatest durability, together with attractive appearance and economy.
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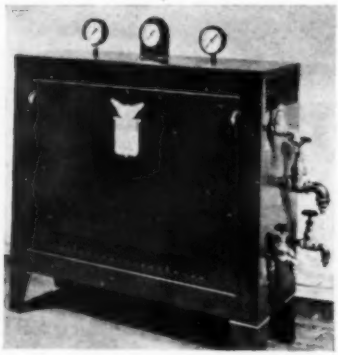

The steel cabinet contains equipment for heating and circulating hot dope.

gliders and plywood planes have been produced in half the time.

"Hot" dope, as the name implies, is dope which has been heated to convert it from a molasses-like syrup to free-flowing consistency for spraying. Formerly this was done by thinning it with solvents. One make of device which provides a constant supply of hot dope at the point of spraying is known as the "Thermotite" system. It includes an arrangement of heating coils, pressure tank, air pump and spray gun. Along with the hot-dope system, pre-doped fabrics have done their part in speeding up glider production.

The component parts of a "Thermotite" applicator are: 1) a standard pressure supply tank to hold the dope; 2) a "Thermotite" unit, consisting of a steam-heated hot dope reservoir and an air-driven circulating fluid pump to return the dope to the unit; 3) dual fluid hose lines, one from the unit to the spray gun, the other from the spray gun through the unit circulating pump which returns unused dope to the unit heater tank; 4) accessories including steam pressure reducing valves; low pressure condensate trap, air, dope and steam operating valves; dope pressure and temperature gauges, steam control gauge and inlet and outlet connections for steam, air and dope; 5) a steel cabinet, adequately ventilated and drained, which contains the entire assembly.

Special dope at full body is placed in the pressure tank at room temperature. Air pressure at 45-lbs. is applied to the pressure tank, forcing the dope into the unit heating reservoir where a cylindrical copper coil heats the dope to a predetermined temperature. Steam at 3½ to 5-lbs. pressure is used as a heating medium. Air pressure at the dope tank continues forcing the material out of the heating chamber and through the material hose to the spray gun.

The flow of dope and the pres-

Operator is ready to spray hot dope.

Like a professional model, your product has to present an attractive appearance in order to compel attention. A good finish on your product can do a great deal toward making it immediately appealing and acceptable to the prospective customer . . . just as a dull, unflattering finish can conceal the smart lines and careful design. Be sure that your merchandise will not go unnoticed — let our artists create an unusual and artistic finish especially for your post-war product now. We are ready to serve you.

In Tempering with Quality

ROCKFORD VARNISH *Company*
ROCKFORD, ILLINOIS

Manufacturers of Protective and Decorative Coatings

sure thereon is more than adequate to meet the usual spray gun consumption, and as surplus dope reaches the gun it is by-passed through the recirculating hose line from the gun through the air-driven pump and returned to the heater shell. The air-driven pump is operated at low speed, approximately at 200-rpm., sufficient only to exercise a desirable suction on by-passed material from the gun and force it back into the heater tank against the incoming pressure of dope from supply tank.

* * *

Pre-doped aircraft protective fabrics are first carefully ironed, then impregnated with nitrate dopes, and calendered. Fabrics pass through the coating machines as many as three times and the weight of the film deposited is carefully checked at intervals on each run. The fabric is under constant laboratory control for "windows" (bubbles in the interstices of the fabric) or other faults. Tapes cut from full widths as well as broad areas of fabric are available.

Although it is generally assumed that the "Thermotite" system is most effective when used with pre-doped fabrics, it produces excellent results when used on raw fabric also. The number of coats required may be reduced by as much as one half when the elevated temperature system is used.

Plant Lab Checks on All Chemical Solutions

A SPECIAL "watchdog" laboratory in the plant of The Glenn L. Martin Co., Baltimore, Md., maintains a constant control over anodizing, plating and all

Sees to it that all solutions are kept at constant concentrations at all times.

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Our research laboratories have been working out special formulations using the latest developments in raw materials. It is our constant purpose to maintain a complete line of finishing materials of high quality to meet the requirements imposed by modernized production methods.

Manufacturers who are interested in improving their finishing production operations are invited to submit their problems to our research laboratory. All inquiries will receive prompt attention.

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other processing solutions. It is paying big dividends in the form of saved manhours and uniform high quality of processed parts for aircraft.

Located in a corner of the plating room, the sole function of this laboratory, which is an integral part of the Finishing and Plating Dept., is to stand watch over the 40 or more chemical baths which are needed in preparing and processing a wide range of parts made of various metals and their alloys and destined for Martin Bombers and transports against corrosion.

Samples are taken from each tank daily and analyzed for various properties. Anodizing baths, for example, are checked for pH, current density, total chromic acid, free chromic acid, specific gravity, etc., while plating baths are analyzed for the amount of metal in solution, free cyamide and similar characteristics.

The laboratory also runs sample parts through the various baths each day for visual inspection of the film or metal deposit.

By taking over the problem of solution control and seeing that all solutions are maintained at constant concentrations at all times, the laboratory has made it possible to place the plating room on a highly standardized production basis despite the wide variety of work handled and the war necessitated use of many semi-skilled employees. With the laboratory as a watchdog, employees are relieved of all worries about varying times and procedures to meet changes in the bath, and absolute uniformity of output in compliance with rigid Army-Navy specifications is assured.

How to Operate Fire Extinguishers

(Continued from page 68)

that supplies the pressure to expel the stream.

Vaporizing liquid extinguishers of the pump-gun type generally are suspended in wall brackets. Remove the extinguisher by grasping the handle in the right hand and pulling outward. Hold the nozzle end in the left hand with the index and middle finger straddling the nozzle tip. On the way to the fire, twist the handle to unlock it and, if the device is of the air pump type, move the index finger over the nozzle tip and pump up pressure. To expel the stream, move index finger back and pump steadily and vigorously with the right hand.

Larger sizes—1, 2 and 3-gallon capacity—are sometimes provided for special use. They are carried to the fire by the handle at the top and operated by hand pump or by stored pressure. To operate the pump type, rest it on the floor, and pump with the left hand while aiming the hose stream with the right hand. The stored pressure type is operated by opening the valve provided on the head castings, while the right hand holds the hose nozzle.

Carbon dioxide extinguishers are carried to the fire with the left hand, by the handle provided for the purpose. To operate, rest the extinguisher on the ground, pull the locking pin out, take the horn-like nozzle in the right hand, and turn the valve counter-clockwise with the left to release the gas.

Pump tank extinguishers are carried to the fire by means of the top handle. The pump is operated by the left hand, while the right hand aims the hose stream.—SAFETY RESEARCH INSTITUTE, INC.

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Chalk up another achievement for Alaka's research chemists. This new Fungicidal Finish has everything! It will not support mold or mildew in any climate at any concentration. A microscope, cultures from Georgetown University and a filter paper demonstrated this simply and quickly.

Yet Alaka Fungicidal Finish is easy to apply by spray, brush or dip . . . has no deteriorating effect upon any surface . . . is non-toxic to human beings . . . dries in less than 15 minutes . . . has great dielectric strength . . . stands up under the various laboratory tests such as salt-spray, abrasion resistance, adhesion and chemical resistance

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Postwar Planning

I SUPPOSE all of us are talking about postwar planning, but none of us can definitely say just what will be done until the time comes. From all conversations I have had with different people, most of them seem to agree that plastics will play a large part in our lives after the war.

How the use of plastics will affect the product-painting field is hard to say. I do know that the casket manufacturers went into plastics, largely for casket trim, but had to paint most of it to harmonize with the color of the casket. So it may be that after the war, when many items will be made of plastics, the plastic surfaces will still be painted for eye appeal and sales effect.

As to our immediate plans for reconversion, we are waiting for some concrete facts and actual ideas of needed material before we can start any ideas we might now have.—EDWIN HOGSTROM.

Metal Products Industry

THE PRE-WAR metal products industries constitute the foundation of our successful war production efforts. These industries, expanded by new plants and facilities, either privately or publicly financed, have made this country an effective "Arsenal of Democracy."

The backlog of unfilled orders in the metal products industries at the end of the first quarter, 1944, amounted to approximately 67 billion dollars, a net decline of about 6 billion dollars from the close of 1943. The total volume of unfilled orders at the end of the first quarter was equivalent to about 11 months work at the first quarter rate of shipments. The backlog of orders for combat materiel, amounting to 14 billion dollars, represented 13.4 months' work. Contract terminations and cutbacks in military programs are reflected in the decline of unfilled orders for virtually all product groups.—FACTS FOR INDUSTRY.

Detroit P. V. & L. Activities

Frederick G. Weed, Vice-President, Director of Research, for Rinshed-Mason Co., and President of the Detroit Paint, Varnish & Lacquer Association, presided at the monthly meeting of the Detroit Association which was held at the Lee Plaza Hotel on November 16th.

Besides a number of out-of-town guests, there were also present 14 credit men from local paint companies. All of those who attended were very much interested in the pertinent remarks of the speaker of the evening, Mr. Edward N. Ronnau, Assistant Vice-President and General Credit Manager of Cook Paint & Varnish Co., Kansas City, Mo., whose subject was "The Credit Situation in the Paint Industry."

The Detroit Club's next meeting will be held on Thursday, January 11th, and it has been announced that the speaker will be Mr. Ernest T. Trigg, President of the National Paint, Varnish & Lacquer Association. An invitation to attend the January meeting is extended to out-of-town paint men who are in Detroit on that date.

J. D. Greene, Manager Advertising and Sales Promotion, Berry Brothers, Inc., is Chairman of the Publicity Committee.

J. R. Esposito Celebrates Birthday

Mr. J. R. Esposito was the honored guest at a birthday dinner given him by 20 Interchemical Corp. and divisional executives at the Union Club, New York City, October 19, 1944. Mr. Esposito has been president of Ault & Wiborg Division for 13 years. The business has expanded greatly in that time and recently Murphy Finishes Corp. of Newark, and Scriver & Quinn of Los Angeles were purchased and added to Interchemical Corp. industrial finishes activities.

Available just now without restriction as to use. You can have Hilo No. 916 Black Crystal for whatever use you desire.

Send your orders at once. While we are prepared to meet your existing needs, we cannot guarantee the future availability of this highly desirable item. First come, first served on No. 916 Black Crystal, subject only to rated war orders which must be given the right of way.

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Industrial FINISHING

Distributed monthly to finishing room and paint shop foremen, production superintendents and company officials of metal-working, woodworking and miscellaneous industrial plants where production cleaning and finishing are major operations in parts and products manufacture.

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Editorial

Troubles That Arise in Finishing Rooms

Few if any finishing rooms that are in active production can boast of being without some kind of trouble, except for short periods of time. A doctor of finishing must be on the job continually, or one must be called in from time to time to keep everything functioning at as nearly 100% as is practicable.

The doctor of finishing may be the finishing foreman or superintendent or a service man from the outside. Fortunate indeed is the manufacturing plant that has a finishing foreman or superintendent who can qualify reasonably well as a dependable doctor of finishing. This man is always on the job and always available.

When trouble occurs in a finishing room or product painting department, if it can be discovered and eliminated quickly, that means less spoilage, less waste of material and time, and fewer items to be stripped and refinished. It gives the establishment a better reputation and more prestige to have no rejects from inspectors or buyers.

Trouble in a finishing department can be greatly minimized by establishing and maintaining thoroughly correct practices in every detail, at every step of the process, from surface preparation to final drying—and whatever may follow the drying of finish coatings. Cleanliness all along the line will eliminate the possibility of certain kinds of trouble. Uniformity in the quality, mixture and viscosity of the material; uniformity in temperature and air conditions; uniformly correct spraying pressures if the material is sprayed; no drafts across coated surfaces; uniformly correct drying—all of these, if carefully attended to, will further minimize the possibility of trouble appearing in product finishing or painting.

Something always seems to be at work trying to unbalance or throw out of line these desirable conditions. And other factors not mentioned here enter the picture,

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too. That is why it is so much more profitable to have a doctor of finishing (an experienced well-informed finishing foreman or technician) on the job all of the time.

Even automatic setups, wherein everything is mechanized, require intelligent supervision. When everything is working just right, a conveyorized automatic setup for cleaning, painting and drying will turn out a lot of work, but if and when some little something goes wrong, then it will go on turning out defective work at just as high a rate of production—until human supervision enters the picture and halts operations or remedies what is causing the trouble.

Tung Oil Again When China Reconverts

In a paper submitted to the 1944 "Convention-at-Home" of the National Paint, Varnish and Lacquer Association, Mr. S. C. Wood of Universal Trading Corp., calls attention to the fact that when the Pacific war ends, China will again be eager to produce and export tung oil to this country for use in the paint industry. Excerpts from Mr. Wood's paper follow:

"Of the total United States imports from China in the last decade, tung oil alone constituted 17% by value, according to United States statistics.

"Financing of the great postwar industrialization of China must depend to a large measure on her exports. Tung oil has been and will continue to be the most important item of China's exports. It is the hope of Chinese that as soon as the situation improves and the war is over . . . there will be an abundance of tung oil, selling at a price considered fair and reasonable by American customers.

"China will emerge from this war 'export conscious.' China will place more emphasis on the export of tung oil because it has been the most important item in China's export to the United States. This effort will have to be channelled in three directions: 1) improvement of production methods and the quality of tung oil; 2) improvement of transportation and storage facilities; 3) improvement of marketing facilities. All of these will invariably lead to more adequate supply and stable prices.

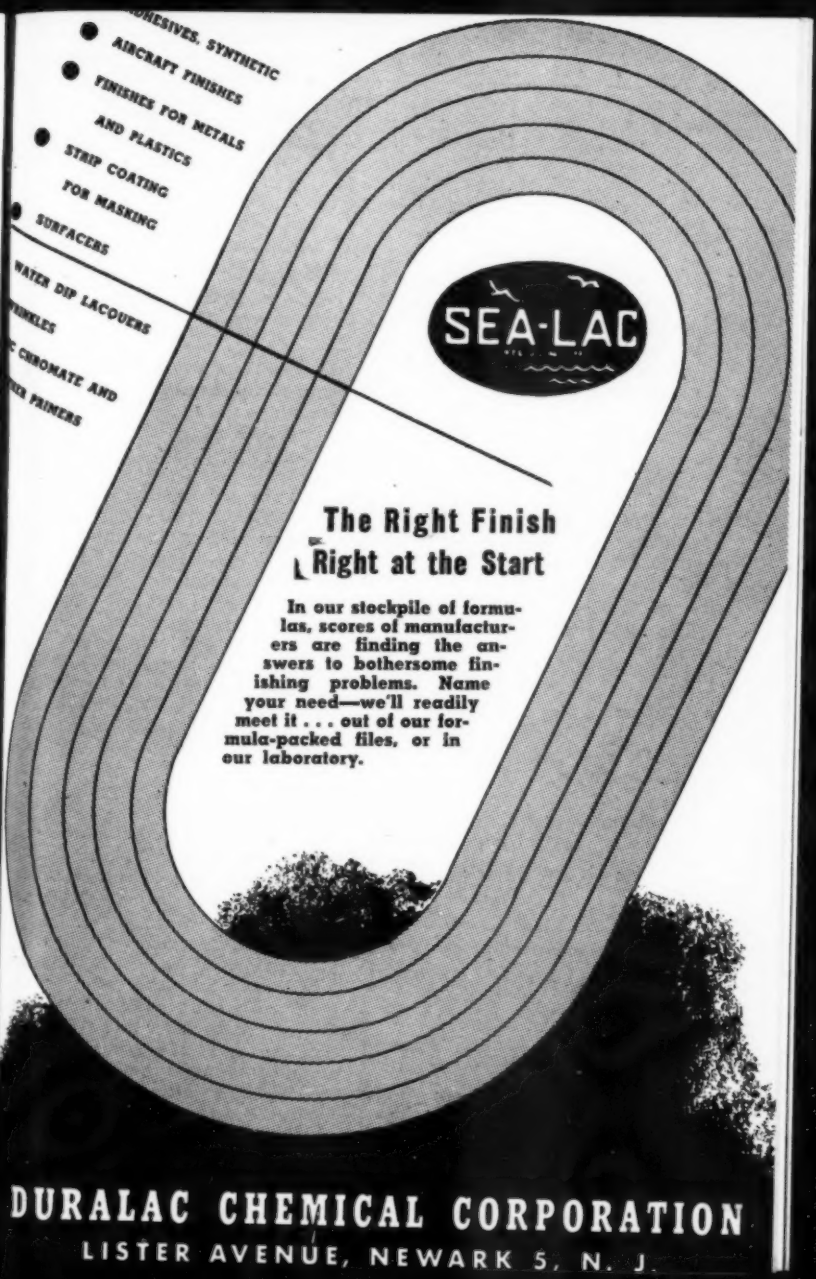
"It has been proven conclusively that no other natural or synthetic oils can match the quick-drying and water-resistant qualities of tung oil. Tung oil should therefore be the ideal raw material for the paint and varnish industry, once it again becomes generally available."

Products of Tomorrow Exposition Next Year

Chicago's spacious Coliseum will be the scene next Spring of the Products of Tomorrow Exposition. It will be the first national showing of new products that will go on the market in the immediate postwar period. Thousands of articles never before seen by the public, including inventions developed during the war as well as old products revolutionized in style and utility, will be on display.

From surveys of American business and from requests for space in the exposition, three things are noticeable:

1) Television and allied fields of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electronics will present a varied array of peacetime adaptations of wartime discoveries.

2) Plastics and the field of synthetics rank high in the industries readying new ideas for civilians.

3) Most manufacturers have their products ready for presentation and await only the word to go ahead from the Government.

In scores of fields manufacturers have found peacetime uses for ideas which were originally thought useful only for war.

Firms knowing the public acceptance of their products will be in a favored position to swing into production when the time comes.

One of the industries showing particular interest in the exposition is the deep freeze industry.

In the fields of plastics will be shown the development of that science in the manufacture of hundreds of items now constructed of other material.

In the field of home appliances the items up for consideration are seemingly endless and range from the "Kitchen of Tomorrow" to other advanced ideas for gracious living.

Potential uses for glass in home construction and interior decoration opens up another vista in which a number of firms are interested.

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Fourth Term Prospects—A word of reassurance to the industrial community on the implications of the November elections is offered by the financial organ, *Business Week*, in a tone of cautious optimism. Roosevelt's victory does not imply four lean years for business, we are advised, for there was nothing in the campaign itself to bind him to a postwar New Deal.

"Almost certainly not a candidate for a fifth term, and with his eye on his place in history," continues this conservative journal, "the President can now afford some independence of the special groups that have supported him in four elections."

* * *

Banner Year—Reviewing the market for protective coatings in 1944, the authoritative *Oil, Paint and Drug Reporter* declares that the paint industry will close its books this year with sales at an all-time peak.

"But gratification over this prospect, due to a large extent to an unabated continuance of war orders," says this publication, "has not served to deter the American manufacturers of coatings and materials from seeking more business in non-military lines." It is generally conceded that the collapse of Germany will result in a cutback of about 40%.

(Continued on page 100)

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VOL. VI

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INDUSTRIAL FINISHING Magazine

342 North Meridian Street **Indianapolis 4, Ind.**

Changing Standards—Among the conceptions to be destroyed in the postwar world are such slogans as "100% virgin wool" and "pure gum rubber," we are gently reminded by the McGraw-Hill Publishing Co. "Successful wartime marriages of various materials, such as the treating of natural wood fibers with synthetic resins and the blending of synthetic rubbers with natural plastics," states this organization, "are beginning to produce progeny so sturdy and so numerous that emphasis upon purebred materials is already lessening."

The blending of synthetic rubber with natural rubber or synthetic plastics, continues this source, will produce tires, gaskets and other products with new high standards of resistance to wear, oil, grease and snagging.

* * *

Steel Plans Competition—The wide-awake steel industry is ready with a new surprise in girding for the great boom anticipated in postwar home-building. It is a light gauge steel, which engineer Milton Male declares has been proven more economical and efficient than wood in wartime tests.

Male, associated with the U. S. Steel Corp., maintains that the metallic product will provide, in addition to fire protection, greater strength, reduced maintenance costs, economy and speed in construction. He points out that prefabricated and demountable housing units have been shipped around the world to outlying military and naval stations, and have chalked up a superb record of service.

* * *

Warning on Paint—The fire hazard from paint increases with the added thickness of the film, warns S. H. Ingberg, of the National Bureau of Standards. A single coat of paint may be only one-thousandth of an inch thick, he states, but when a ship has as many as fifty brush coats on its surface, the heavy coating will contribute tangibly to the spread of fire.

* * *

Television Is Ready—The path is open for added postwar employment and economic expansion through the television industry, and low-cost, efficient home receivers can be made available to the public soon after the war. That is the contention of Thomas F. Joyce of R.C.A.

Greatly improved units will be sold at prices ranging from about $150 up, far superior to prewar models from the standpoint of picture size, detail, brightness, contrast and simplicity of operation. RCA alone, says Joyce, will need to invest considerably more than ten million dollars to underwrite this development, and stands ready to go ahead as soon as standards and frequency assignments are fixed.

* * *

Revelation From Baekeland—A little-known vignette of industrial history was recounted by Dr. Robert Moore of the Bakelite Corp., and a past president of the American Institute of Chemists, in his address before the dinner meeting of that group in New York a few weeks ago. The disclosure concerned the guest of the evening, Dr. Maximilian Toch, who was being honored on his 80th birthday.

Dr. Moore told the 200 assembled chemists that the late Dr. Leo Baekeland had often attributed his perfection of Bakelite in large measure to the encourage-

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ment given him in his early unsuccessful research by Dr. Toch, a life-long friend and counselor. The development of Bakelite from phenol and formaldehyde, of course, marked a great milestone in the progress of American technology.

* * *

Words of Wisdom—"Save the surface and you save all" has long been the motto of our paint and varnish manufacturers. That wise and pithy slogan has been offered to the fast-growing quick-freezing industry by Dr. Donald K. Tressler, manager of the General Electric Consumers Institute.

In the packaging of foods to be frozen, advises this expert, wrapping materials that crack or tear will result in spoilage through dehydration or oxidation. Among other pointers, Dr. Tressler observes that rectangular containers are preferable to cylindrical ones.

* * *

Outlook For Autos—Twelve billion dollars would have been spent on new cars had they been available during the past three years, according to the E. W. Axe research organization. The deferred demand at the end of the war should be for about 17,000,000 cars at the average 1941 price. However, we are cautioned, if postwar prices rise 50% above the peacetime figure, the market for new cars will be cut drastically below that estimate.

* * *

Peace and Jobs—A relatively cheerful picture of peacetime employment prospects is offered by Brig. Gen. Leonard P. Ayres, world-renowned economist and vice-president of the Cleveland Trust Co. Although other authorities have been warning that we may have upwards of 15,000,000 unemployed on our hands, the General believes the figure may not go above 2,500,000.

"No very serious readjustments will be required in about half our economy," declares Ayres, "but very difficult changes will be required in the rest of it." He warns that we must face the simple fact that manufacturing industries will have to release about 4,000,000 workers after the war, and the problem will not be solved merely by telling business to take care of them.

* * *

To be Made of Light Metals—Visitors to the National Metals Congress recently were awed with a preview of some of the lightweight products awaiting the advent of peace. Featherweight furniture, and lawnmowers that can be pushed with one finger, are among the wonders ready for production.

Aluminum, magnesium and other light metals are being adopted increasingly in the manufacture of sewing machines, vacuum cleaners and a long list of household goods. An important consideration is the progress that has been made, under the impact of war, in alloying and processing the light metals. The automobile industry, however, appears to be hesitant in accepting innovations that will add to the selling price of their postwar products.

* * *

Rosy Future For Jeeps—In the opinion of Charles E. Sorensen, president of Willys-Overland Motors, production of the Jeep in the years ahead will soar as spectacularly as did the output of the Model T Ford after the first World War.

Sorensen contends that the Jeep is one of the great developments of World War II. Capable of 60

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For Visitors—Readers of INDUSTRIAL FINISHING are encouraged to apply for free radio broadcast tickets when planning a visit to New York. Among the cooperating sponsors are the Sherwin-Williams Co., Gulf Oil Corp., and the Coca-Cola Co. Drop a line to: *Lawrence H. Singer, 130 West 86 St., New York 24, N. Y.*

Among the new Broadway plays meriting your attention are: "Harvey," a delightful fantasy with Frank Fay; "I Remember Mama," the season's great comedy success, and George Abbott's newest laugh-making production, "Snafu."

Blushing of Lacquer—Prevention; Treatment

★ In these days of strict allocation control of certain lacquer solvents, lacquer products made for use on civilian products may give trouble in damp weather. Moisture blush was a common trouble in the early days of nitrocellulose lacquers, but chemists soon found ways to eliminate it altogether except under the most unfavorable conditions. The solution of the problem was the proper choice and balance of solvents. Certain solvents were found to be particularly useful in eliminating moisture blush. Today these solvents are on strict allocation, and are forbidden in lacquers for purely civilian end-use. The result is that the lacquers made for such purposes are somewhat more sensitive to moisture than in normal times.

Blushing is a condition where the lacquer turns white in certain areas over which the natural air currents move most rapidly. It is most likely to occur in damp weather, when the relative humidity is high. It occurs where solvents evaporate rapidly under conditions of high humirity. The rapid evaporation cools the film below the dew point of the air, and moisture condenses on the wet film. This moisture may disperse in the lacquer and precipitate out some of the non-volatile portion. This precipitation occurs as a whitish, milky spot; and is especially noticeable in clear and flat lacquers and lacquer sealers.

Most such spots can be removed by merely spraying a thin coat of lacquer thinner or retarder over the work. If the blushing is deep, the spots may disappear and reappear later while the final coat is drying. This is especially likely to happen if the final coat is varnish, used over a lacquer sealer. Such a recurrence may be prevented by thoroughly wetting the film with the thinner or retarder when removing the spots, so as to put all the precipitated solids back into solution.

Even if the final coat is varnish, and white spots begin to show up in the sealer while the varnish is drying, it is not too late to remedy the trouble if the varnish is not too dry. Simply brush a wet coat of lacquer retarder over the white spots with a soft-brisle brush. The

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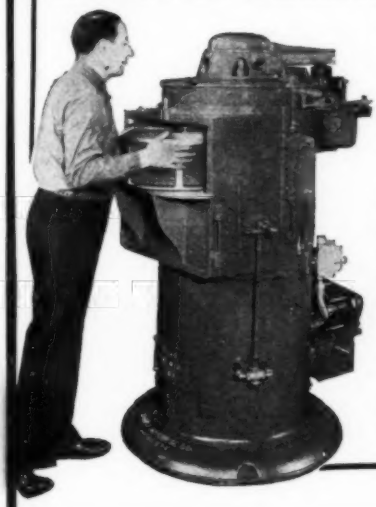

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Write for further information or submit samples to be coated.

RONCI MACHINE CO.

2 Atlantic Blvd. Centredale 11, R. I.

solvents will penetrate through the varnish into the sealer film and permanently remove the blush without damaging the varnish. This is a tricky procedure, but it works if done carefully.

On damp days, use plenty of retarder in lacquer products. Retarders are slow-evaporating blends of solvents which do not cool the film as much as the faster solvents used in ordinary lacquer thinners. Use these retarders as the suppliers direct. *Use them only when needed.*

One way to minimize blushing is to keep down air movement. Prevent, at all costs, a draft over newly lacquered products in damp weather. Remove them as soon as possible from spray booths, where air movement is always strong. Shut all windows near lacquered products to eliminate all drafts.

Another way to minimize blushing is to turn on the heat in the finishing room. This lowers the relative humidity, and decreases the danger of evaporation cooling the lacquer film below the dew point of the air. Even in summer weather this extra heat is a help.

A very slight blush on a lacquer sealer may not cause the familiar whitish discoloration, but there still is a film of moisture on the surface. This film will cause subsequent coats, especially varnishes or varnish enamels, to crawl. Look for this if such coatings crawl in damp weather. The trouble can be eliminated by washing the surface with turpentine before applying the varnish.—R. H. WAMPLER.

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"Kidde Industry" is the name of a colorful every-other-month magazine that contains illustrated information, suggestions and recommendations about fire prevention in industry. It is published by Walter Kidde & Co., Inc., 140 Cedar St., New York 6, N. Y.

Plastic Surfacing Book

A big attractive book — 44 pages 9½x12-in. bound with plastic between heavy covers of many colors—presents interesting information about plastic coatings for durability and decorative effects on products of all kinds.

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This book will give you new ideas and suggestions for postwar activities. It was costly to produce and it looks expensive, but your request on business stationery will bring a copy to you free. Write Roxalin Flexible Finishes, Inc., 800 Magnolia Ave., Elizabeth F, N.J.

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The second edition of The National Paint Dictionary by Jeffrey R. Stewart is more than a dictionary; it is really a one-volume encyclopedia of illustrated information conveniently arranged alphabetically and attractively presented in 224 pages 9x12-in. It contains approximately 200 illustrations and charts; includes definitions of trade names and raw materials used in the paint and allied industries; has charts, tables, useful information and miscellaneous data; describes all of the important testing devices and apparatus used in the laboratory; is strictly technical, thoroughly authentic and completely unbiased.

The author, Jeffrey R. Stewart, F. A. I. C., is editor and publisher of the National Paint Bulletin. He was formerly associated as research chemist with Dr. Henry A. Gardner of the National Paint, Varnish & Lacquer Association.

The heavy green covers are attractively embossed and have raised gold letters on a panel of red. The price of this elaborate volume, which looks like $15.00, is only $7.50.

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Printing Ink Corp., conducted a color-acceptance survey among several hundred leading manufacturers in an effort to obtain information that would be useful in forming a sound background to the styling problems of the immediate future. Although the scarcity of consumer goods during the war period has "frozen" the market for color in many types of merchandise, it seems likely that the period of reconversion will bring with it new trends in color, new desires and wants on the part of the American public.

This Eagle booklet (24 pages 3½x 8½-in.) reveals some very interesting and surprising percentage figures on color preference for a wide range of products. A copy is yours for the asking. Address your request to Charles A. Gardiner, Advertising Manager of General Printing Ink Corp., 100 Sixth Ave., New York 13, N. Y.

Industrial Tape Uses Are Portrayed in Magazine

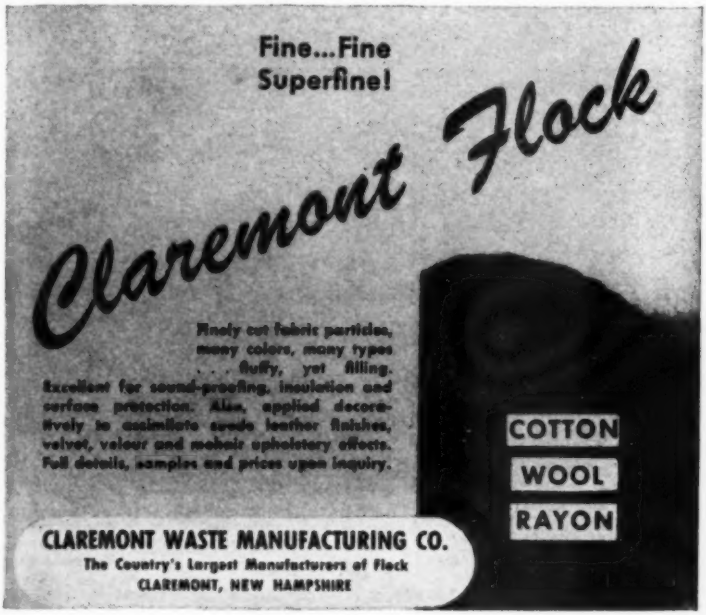
Industrial Tape Corp., New Brunswick, N. J., has brought out its first issue of an every-other-month magazine called Industrial Review. The purpose of this publication is to show pictorially and descriptively practical applications for pressure sensitive tapes. While most of the uses illustrated in the first issue came from war plants, this is but a reflection of the present emphasis on the use of tapes in war production. These same uses will suggest peacetime applications to those in the manufacturing field.

Armco Paintgrip Sheet Steel Explained in Booklet

Design and fabricating advantages of a special surface-treated sheet steel that takes and preserves paint are presented in a booklet just published by The American Rolling Mill Co., Middletown, Ohio.

Armco cold-rolled "Paintgrip" is described as essentially a steel sheet that is given an electrolytic zinc flash and then bonderized at the mill. Advantages of the sheet are listed: 1) Products can be drawn or formed and painted immediately. Bonderizing after fabrication is eliminated and no surface etching is needed. 2) Cold-rolled Paintgrip will draw, form, weld, and solder readily. The bonderized surface will not flake, peel or powder during fabrication. 3) Under normal conditions it resists rust during shipment and while in storage, either as sheets or in semi-finished parts.

Product applications of particular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interest to product engineers, designers and architects are kitchen and bathroom cabinets, refrigerator wrappers, furnace casings, metal furniture, filing cabinets, auto body parts, vending machines, ice cream cabinets, fan blades, lighting fixtures, auto lamps, deep freeze cabinets and hospital equipment.

Data are given on physical properties, corrosion resistance and paint life. Recommended practices for welding, soldering and finishing are described.

Booklet of Color Standards

General Printing Ink Corp. has ready for distribution the second edition of "Color Standards"—an excellent check list of color standards and color systems widely used in American industry and science. This second edition has been brought up to date and lists a total of 48 items, which is 14 more than appeared in the first issue.

If you would like to have a copy of this informative booklet, write to Charles A. Gardiner, Advertising manager, General Printing Ink Corp., 100 Sixth Ave., New York 13, N. Y. There is no charge.

New Heated Dip Tank Catalogs

Two profusely illustrated 16-page catalogs containing complete specifications have just been issued covering insulated hot-dip tanks that are fueled by city gas, natural gas, or electrically heated with thermostatic controls. Illustrations and specifications cover dip tanks used in metal cleaning, degreasing, rustproofing, finger-print neutralizing, black oxide finishing, paint stripping; heating, melting and dipping waxes, electrical compounds, rosin, glue, chemicals, ethyl-cellulose plastic strip coatings and similar industrial compounds. For free copies write to Aeroil Burner Co., Inc., Box BG, West New York, New Jersey.

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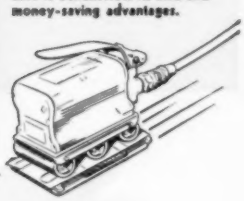

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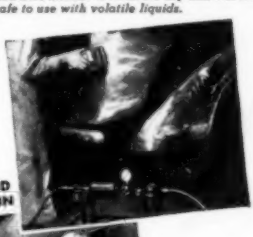

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